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ABSTRACT

This book presents a wide-ranging analysis of what can be done to reduce the misuse of psychoactive drugs without compromising appreciation for their therapeutic value. Emphasis is placed on the need to give physicians guidelines for deciding to whom to prescribe, what to prescribe, how much, and for how long. Chapter 1 provides an introduction and chapter 2 gives an overview of changing trends in the use and misuse of psychoactive drugs. Common patterns of inappropriate use in developing and developed countries are identified and different methods for assessing levels of use are critically compared. For each class of drugs, information is provided on dependence liability, therapeutic value, and social benefits. Chapter 3 explores factors that influence prescribing practices. Chapter 4 outlines the principles of rational prescribing as these pertain to patients complaining of life stress, to patients whose complaints are related to disease states, and to "doctor shoppers." Chapter 5 suggests alternatives to psychoactive drugs. Chapter 6 focuses on the role of medical education in promoting rational prescribing and chapter 7 considers the role of continuing education. Sources of information are identified in chapter 8 and chapter 9 looks at information dissemination. Chapter 10 describes assessment of the effectiveness of interventions. The final chapter provides recommendations for institutions concerned with medical education. (NB)

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PSYCHOACTIVE DRUGS: Improving prescribing practices

Edited by
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The World Health Organization is a specialized agency of the United Nations with primary responsibility for international health matters and public health. Through this organization, which was created in 1948, the health professions of some 165 countries exchange their knowledge and experience with the aim of making possible the attainment by all citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life.

By means of direct technical cooperation with its Member States, and by stimulating such cooperation among them, WHO promotes the development of comprehensive health services, the prevention and control of diseases, the improvement of environmental conditions, the development of health manpower, the coordination and development of biomedical and health services research, and the planning and implementation of health programmes.

These broad fields of endeavour encompass a wide variety of activities, such as developing systems of primary health care that reach the whole population of Member countries; promoting the health of mothers and children; combating malnutrition; controlling malaria and other communicable diseases, including tuberculosis and leprosy; having achieved the eradication of smallpox, promoting mass immunization against a number of other preventable diseases; improving mental health; providing safe water supplies; and training health personnel of all categories.

Progress towards better health throughout the world also demands international cooperation in such matters as establishing international standards for biological substances, pesticides, and pharmaceuticals; formulating environmental health criteria; recommending international nonproprietary names for drugs; administering the International Health Regulations; revising the International Classification of Diseases, Injuries, and Causes of Death; and collecting and disseminating health statistical information.

Further information on many aspects of WHO's work is presented in the Organization's publications.

Psychoactive drugs: Improving prescribing practices

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WHO Meeting on Training of Health Care Professionals for Improving Prescription, Delivery and Utilization of Psychoactive Substances 98

Foreword

If WHO's declared goal of Health for All by the Year 2000 is to be achieved, physicians must have at their disposal a certain number of psychoactive substances. Because the use of these substances is so widespread, steps must be taken to ensure that they are used as rationally as possible. Some of these psychoactive substances are under international control, and WHO's role in recommending that such substances should be controlled in this way involves the development of methods of assessing both the harm done by the use of these drugs and their therapeutic usefulness. WHO is also responsible for collating and analysing this information so that the WHO Expert Committee on Drug Dependence can make recommendations for control based on the benefit–risk ratio of any given drug.

WHO has published guidelines for the control of narcotic drugs and psychoactive substances in the context of the international treaties; these should assist countries in undertaking their responsibilities under the treaties.

WHO has also established new procedures for assessing psychoactive substances involving a number of organizations that provide WHO with data for this purpose. The pharmaceutical industry plays an important role in the preparation of background documents for distribution to the members of the WHO Expert Committee; it is on the basis of these documents that decisions are made. Since the 1971 Convention came into force in 1976, WHO has reviewed many groups of drugs, and the United Nations Commission on Narcotic Drugs has accepted WHO's recommendations relating to benzodiazepines, opioid agonist and antagonist analgesics and amphetamine-like drugs. A number of other groups of drugs have been selected for review in the future.

WHO has also recognized that, in addition to assessing the benefit–risk ratio of psychoactive substances with dependence liability, it is also important to encourage members of the medical profession to prescribe such drugs rationally. This involves the appropriate training of physicians in this field, which in turn depends on cooperation between national authorities, schools of medicine and other related institutions, professional organizations and those involved in the manufacture and sale of these drugs.

The WHO Executive Board has considered this subject and has requested the Organization to investigate these issues further. This publication has been developed from the discussions at a meeting convened by WHO on the training of health care professionals in rational prescribing, held in Moscow from 8 to 13 October 1984 with the collaboration of the Soviet authorities. It is hoped that it will be of assistance to all those concerned with the problem.

T. Lambo
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The editors also thank all those who have contributed to this publication (see list on pages viii–ix) for their skill, perseverance, and above all their enthusiasm. We should also like to thank Dr J.-J. Guilbert, Dr J. F. Dunne and Dr P. Brudon Jakobowicz for reading the manuscript and for their very constructive help.

Although some participants have not been directly associated with the preparation of the text, their contributions to the content of the publication as a whole have been of substantial importance and the authors and editors have benefited from their suggestions and advice.

The meeting could not have taken place without the wholehearted support of the United Nations Fund for Drug Abuse Control and the collaboration of the Soviet authorities.

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1. Introduction

Although biological methods of treatment for mental illnesses were available before the Second World War (malaria for general paralysis in 1917; continuous narcosis for functional psychosis in 1922; insulin shock for schizophrenia in 1933) it was not until the early 1950s that effective and safe psychoactive drugs became available. As a consequence of the introduction of chlorpromazine and reserpine, the number of mental hospital in-patients has fallen markedly, even though admission rates have increased, lengths of stay have been reduced and much greater emphasis is now placed on care within the community. The value of antidepressants in the treatment of severe depressive illness is also well documented. The progress made should not be perceived, however, solely in terms of the number of hospital patients and the economic benefits of out-patient treatment. The very real reduction in human suffering, both of patients and their families, must never be forgotten. Furthermore, the ability to treat psychotic ("mad") patients within the community has removed much of the stigma of mental illness and reduced public fear of it.

Chlorpromazine and reserpine were, of course, just the beginning of the pharmacotherapy revolution in psychiatry. Since then, a whole range of psychoactive drugs has been introduced, including, for example, the anxiolytics (minor tranquillizers), hypnotics and antidepressants, and it is these that are at the centre of current concern about the increasing, and what is perceived as the excessive, use of such drugs.

In order to be able to discuss questions of the use, abuse and misuse of these drugs it is essential to define the terms used. The difficulty of defining "abuse" and "misuse" is discussed later (see p. 8); as far as the substances themselves are concerned, this problem has been considered extensively both by WHO and by the United Nations Commission on Narcotic Drugs and their definitions have been adopted here. The term "psychoactive" embraces all those substances that affect the mind. It is commonly used synonymously with "psychotropic", but "psychoactive" embraces the whole group of substances, while "psychotropic" covers only those that influence mental processes *and* can lead to dependence and are listed in the 1971 Convention on Psychotropic Substances. In this publication, the term "psychoactive" means prescribed psychoactive substances (not LSD, cannabis, etc.).

It is perhaps worth while to try to analyse why the increasing use of psychoactive drugs arouses so much concern when an increased number of

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prescriptions for nonpsychoactive drugs rarely provokes such strong reactions. This difference in response is partly because psychoactive drugs are often used, not to achieve a cure, but to provide symptomatic relief only. This cannot be the whole answer, however, because symptomatic treatment is well established in medical practice and is not usually a cause of concern.

At the root of the problem of the use of psychoactive drugs is the fact that the symptoms for which they are prescribed, such as insomnia, depression, anxiety, and inability to cope, are often those of underlying personal, interpersonal and social problems rather than of recognized medical conditions. Thus the medical profession finds itself providing a pharmacological response to nonmedical problems, a situation with profound implications for society as a whole. It is the deep unease about this situation, coupled with the knowledge that the drugs being prescribed in such large quantities can be misused and give rise to dependence, that is the cause of the concern about the large number of prescriptions for psychoactive drugs.

It is difficult to estimate the extent of psychoactive drug misuse worldwide, but some misuse has been identified in 88 countries in all regions of the world. The massive nature of the problem was highlighted at the Conference of Ministers of Health on Narcotic and Psychotropic Drug Misuse held in London in March 1986.[1] The use and abuse of psychotropic drugs should not, however, be seen in isolation. Hypnotics, tranquillizers, and antidepressants are only part of the whole spectrum of psychoactive substances, which includes not only heroin, cocaine, etc., but also medicinal and recreational drugs available without prescription. Control of illicit drugs is the task of the law enforcement agencies, such as the police and customs; responsibility for controlling the availability of the two most important recreational drugs, tobacco and alcohol, clearly lies with governments. In contrast, control of the availability of prescribed psychoactive drugs is undoubtedly the responsibility of the medical profession who prescribe them; the problems associated with their abuse can therefore be considered as iatrogenic. Any attempts to control the availability of psychoactive drugs and to reduce the incidence of the associated problems must therefore be focused on the medical profession.

These problems and the concern they generate are not new. For example, during the 1950s and 1960s, much concern was expressed about the increasing misuse and abuse of a wide variety of psychoactive substances. In 1956 the United Nations Commission on Narcotics Drugs drew attention to the abuse of amphetamines and in 1965 WHO issued a warning regarding the misuse of sedatives. A number of countries enacted legislation, the effectiveness of which was hampered by the lack of international controls; as a result, in 1971, the Convention on Psychotropic Substances was adopted at the Vienna Conference,[2] at which 71 states were represented.

The Convention provides for the control of 98 psychotropic substances, which are assigned to one of four Schedules. Schedule 1 drugs are

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[1] WORLD HEALTH ORGANIZATION. *Report of the Director-General on abuse of narcotic and psychotropic substances*. Unpublished document A39/10 Add. 1 (1986).

[2] The Convention on Psychotropic Substances 1971, Vienna, 21 February 1971. Unpublished document E/Conf. 58/6, New York, United Nations, (1977).

those most strictly controlled (the use of such drugs even for laboratory purposes requires permission from the Government concerned), and Schedule 4 the least strictly controlled. The decision to subject a drug to control under the 1971 Convention depends, firstly, on its liability to produce dependence and its potential for abuse; secondly, on the social and public health problems that may arise as a result of this abuse; and thirdly on its therapeutic usefulness.

It is the therapeutic usefulness of psychoactive drugs that can easily be overlooked when concern about their excessive use arises. However, the scientific evaluation of a drug should not be influenced by attitudes and value judgements, and the same stringent tests and standards should be applied to both psychoactive and nonpsychoactive drugs. For example, the usefulness of any drug depends on its therapeutic efficacy at optimum dose and duration of treatment. Prescription of the optimum dosage is very important; if many patients receive too small or too large a dose, then a high proportion of the drug being prescribed may be wasted; in contrast, if most patients receive the correct dose of a drug that has been shown to be efficacious, then the total amount prescribed, even if large, will be used for the intended purpose. In this context, the development of tolerance to a drug may mean that the prescribed dose is no longer effective and that to continue prescribing it at that dose is of little or no use.

For psychoactive, as for nonpsychoactive drugs, therefore, the aim should be to ensure that they are prescribed only for the condition(s) for which they have been shown to be effective, and not for any others, and that they are prescribed in the correct dose and for the correct period of time. To achieve this aim, i.e., the rational prescribing of psychoactive substances, requires a training programme primarily for physicians but also for other health workers.

During recent years WHO has devoted a great deal of effort to publicizing both the dangers associated with the use of psychotropic drugs and the benefits that can be derived from their use. In particular, a meeting was organized in Moscow in October 1984, in collaboration with the United Nations Fund for Drug Abuse Control and the Soviet authorities, whose purpose was to:

- Identify deficiencies in training programmes already in existence on the rational use of psychoactive drugs and examine various educational approaches that might be useful in eliminating the excessive use of these drugs;

- Investigate what other measures, apart from education, might help to ensure the rational use of drugs;

- Discuss the role which various medical educational institutions, medical and other professional associations, the pharmaceutical industry, government agencies, nongovernmental organizations and international organizations could play in these educational programmes, and the way in which they might be persuaded to cooperate in this task;

- Seek and encourage collaboration in this field between various interested parties and, in particular, the nongovernmental organizations.

From the start, the meeting understood the term "training" in the broadest possible sense; improving the prescribing of psychoactive drugs will not be achieved merely by including a few lectures on the subject in undergraduate medical training and providing refresher courses for post-graduates. It was recognized that many factors influence prescribing and that many training approaches are possible.

The first section of this publication deals with the background to the problems associated with psychoactive drug use. The whole area of such use is reviewed and different approaches to assessing the level of use are presented; patterns of inappropriate use are described and the particular problems of developing countries identified. The effectiveness and the therapeutic usefulness of these drugs are also emphasized. This helps to make the point that the aim of this book is not simply to emphasize the dangers of psychoactive drug use and to campaign blindly for a reduction in such use, but rather to *improve* the way in which they are prescribed. Their beneficial effects can then be made available to all who need them without at the same time increasing the numbers of people dependent on them or consuming excessive amounts.

The economic background to the prescribing of psychoactive drugs is also important. The multinational pharmaceutical companies are both large and highly profitable, and make a substantial contribution to the economy of the (mainly rich) countries in which they are based. In these countries, their influence on drug policy is also likely to be considerable. The developing countries, however, do not reap the financial benefits of drug manufacture as they import most of their drugs. Operating as they do on limited budgets, the availability of relatively cheap, cost-effective psychoactive drugs is welcome. If, however, the comparative cheapness of these drugs serves as an inducement to prescribe them inappropriately, not only is the morbidity associated with their use increased unnecessarily, but funds are diverted from more urgent health priorities.

Because these drugs are (or should be) available only on prescription from a physician, the act of prescribing them is itself of great significance in achieving improvements in the way in which they are used. Prescribing is therefore the topic of the second section of this book, in which the many factors influencing it are explored. These include the individual doctor's own educational experiences, both undergraduate and postgraduate, the varied activities of the pharmaceutical companies, and the doctor's own personal characteristics; the patient himself may affect the doctor's decision, as may the other health professionals involved, and so on. All of these ill-defined and often interrelated factors may affect the very important decisions that the doctor has to make: to whom to prescribe, what to prescribe, how much and for how long.

In the light of the information on the variety of influences acting on doctors, often (perhaps usually) without their being aware of them the chapter on the principles of rational prescribing shows the way forward. It provides clear guidelines on a scientific approach to prescribing psychoactive drugs, reminding the doctor that the same criteria apply to prescribing these drugs as to any other. For example, the condition or symptom to be treated must be identified, a decision must be taken as to the appropriate duration of treatment, patients at risk from side-effects must be identified, side-effects must be monitored, and so on. All of these decisions and

observations are usually made automatically for nonpsychoactive drug prescriptions; when psychoactive drugs are involved, however, the usual clinical approach may not be followed, perhaps because it seems less appropriate when dealing with the personal, interpersonal and social problems underlying the patient's symptoms. This chapter thus provides a timely reminder of good clinical practice.

Still on a practical note, the chapter on alternatives to the prescribing of psychoactive drugs emphasizes that, if inappropriate use of such drugs is to be reduced, the doctor must have alternatives to offer the patient. The life stresses producing the patient's symptoms are often unlikely to go away and the doctor is rarely in a position to deal with them. Even if a pharmacological solution is seen to be inappropriate, it is difficult for a doctor to withhold symptomatic relief and to offer nothing else when faced by a patient suffering, for example, from insomnia, anxiety or depression. However, a variety of other approaches are available, including behaviour therapy, psychotherapy, counselling, etc. Some of these approaches sound technical and difficult, but are often, in fact, part of the total therapeutic relationship between doctor and patient. A great advantage of their use is that professionals other than physicians can be trained to carry them out. More important, however, is that the patient retains responsibility for his own life and avoids being labelled as "sick" or as a patient; this in itself may be of value in preventing the future abuse of drugs.

In the light of the greater understanding thus achieved about prescribing psychoactive drugs, and of how it should be done, the third section of the book addresses the problem of how to train health care professionals and, in particular, physicians to improve their prescribing practices.

This must begin in formal undergraduate education, and the shortcomings of the present system are explored and identified, since it is these that eventually lead to the inappropriate prescribing of psychoactive drugs. Psychoactive drug use and the consequences of abuse must be formally taught in medical schools and receive the attention merited by a condition that can cause widespread public health and social problems. However, as already pointed out, undergraduate training is only the starting point. The practising doctor not only has to keep abreast of new drugs and treatment, but is also exposed to a variety of influences. Continuing education is obviously essential and it is important that all the institutions and organizations that are in a position to train and influence the doctor are involved so that this influence is exerted in the direction of the rational use of psychoactive drugs.

A variety of professional organizations are involved in continued medical training, particularly of the primary care physician, their involvement taking such forms as seminars, conferences, articles in journals, etc.; more important, perhaps, is their central role in liaising with other bodies, such as the pharmaceutical industry and the government. Professional organizations are usually highly respected and their influence on doctors, the public and other institutions is considerable. Large-scale efforts towards improving rational prescribing must therefore involve these organizations, not only because they are in a position to "deliver" such training but also because, without their influence, any such efforts lack credibility.

The role of the pharmaceutical companies in training is often ignored in the belief that everything that they do, including financing formal

meetings, is aimed at increasing the sale of their products. Their influence may thus be perceived as running counter to the aim of rational prescribing, but their role in research and in disseminating information cannot be ignored and, in the long run, the optimal prescribing of psychoactive drugs will also be in their best interests. Undoubtedly, the best way to take advantage of their skills and resources is by inviting them to participate in programmes at all levels. Collaboration between the pharmaceutical industry and other interested bodies is more likely to be fruitful in achieving rational prescribing than suspicion and confrontation.

Finally, of course, it is the public who, as patients, consume psychoactive drugs, and their expectations and pressures may influence the doctor's decision whether or not to prescribe them. Their interests are represented by consumers' organizations which, while they have no direct responsibility for the training of health professionals, have seen fit to contribute to it by the provision of specific information about all classes of drugs, including psychoactive ones.

Other nongovernmental organizations, often representing specific interests, may also have considerable influence; some are primarily self-help groups, which may play a significant role in policy planning and in disseminating information to professionals. Governments also play an important part, by virtue of the fact that they control the availability of drugs; there are many opportunities for increasing knowledge about psychoactive drugs at every stage of this control process. Because psychoactive drugs are used in all parts of the world and are controlled under international conventions, international organizations and, in particular, WHO, can also make an important contribution.

Clearly, the essential component of the training process is information. This can be gathered from a variety of sources and imparted in a variety of ways. It is important to ensure that the content and the method used to disseminate information are appropriate to the target audience. It is for this reason that the evaluation of training is essential so that a sound basis can be developed for future efforts. For example, it is necessary to determine which items of information and which methods of imparting them are effective in bringing about the rational prescribing of psychotropic drugs.

By now it will be appreciated that the Moscow meeting was wide-ranging in its discussions and that every possible approach to education was explored. The participants came from a wide variety of professional disciplines and from all parts of the world. This diversity of background and experience enriched the discussion at the meeting and has made an invaluable contribution to the quality and usefulness of this publication. Although different chapters were the responsibility of particular authors, they made use of the comments, suggestions and opinions of the whole group. This publication can only be a summary of the discussions and of the conclusions reached.

While the ultimate aim of this publication is to communicate some of the ideas considered above to health professionals of all kinds, it is intended primarily for physicians, although it is realised that responsibility for community health care has different structures in different countries. It is not, however, just a collection of ideas; the meeting produced firm recommendations which should serve as guidelines for policy makers. It should be emphasized that the term "policy makers", as used here, includes

not only government health authorities, but universities, post-graduate colleges and other groups, such as industry, all of which have an important influence. The recommendations of the Moscow meeting have been reproduced in Chapter 11 and the participants are listed in Annex 1.

2. Psychoactive drugs: the present situation

For many years the view has been held among both the medical and lay communities that there is a great deal of inappropriate medical use of psychoactive drugs. Since this publication is concerned with the role of training in the avoidance of such use, it is important first to determine the form which it takes and its extent.

Medically inappropriate use of psychoactive drugs can involve both doctors and patients. Doctors may prescribe such drugs for inappropriate conditions, either because diagnosis is difficult or because their training is inadequate, or may prescribe them for inappropriate periods of time. In industrially developed countries there is a tendency for many therapeutic agents to be used for longer than is necessary for the continued relief of the disorder concerned. Patients may also use a drug inappropriately, either deliberately or unwittingly, whether it was prescribed for them or for some other person. Such inappropriate use of drugs is widespread in both industrially developed and developing countries. Hence inappropriate use may take the form of both overuse and underuse, depending on the circumstances and the country. Evidence, largely anecdotal, suggests that the unregulated sale and inappropriate use of drugs is especially widespread in those countries where medical attention is least available. It has been suggested (Marks, 1978) that this type of inappropriate use should be designated "misuse" and that "abuse" should be applied to drug use which is unrelated to and inconsistent with accepted medical practice (essentially the taking of drugs for sociorecreational purposes).

Classification

The categories of psychoactive drugs that are, or have been used in medicine are discussed below (see also Table 1).

Neuroleptic drugs

These are used mainly for the relief of psychoses; the "open door" policy currently adopted by many mental hospitals around the world would not be possible without them. They include a wide variety of substances, differing

Table 1. Categories, chemical groups and representative examples of psychoactive drugs used in therapy

Category	Groups	Representative examples
Neuroleptics	Phenothiazines	Chlorpromazine, thioridazine
	Thioxanthenes	Chlorprothixine
	Butyrophenones	Haloperidol
	Rauwolfia alkaloids	Reserpine
Antidepressants	Tricyclics tetracyclics	Imipramine, amitriptyline
	Monoamine oxidase inhibitors	Iproniazid
	Euphoriants	Amphetamine
	Lithium salts	Lithium carbonate
Hypnotic sedatives	Miscellaneous early hypnotics	Bromides, chloral hydrate
	Barbiturates	Phenobarbital
	Nonbarbiturate hypnotics	Glutethimide, methaqualone
	Benzodiazepines	Nitrazepam
Anxiolytics	Phenothiazines	Trifluoperazine
	Propanediols, etc.	Meprobamate
	Benzodiazepines	Diazepam

in their relative sedative and stimulating effects, in their level of organ toxicity and particularly in the intensity of extrapyramidal dysfunction associated with their administration at therapeutic dosage. Although side-effects may be a problem with the use of neuroleptics, particularly with prolonged chronic use, members of this therapeutic class are almost totally devoid of risk of dependence and are probably rarely used inappropriately or abused by patients. Several compounds are now available having fewer and/or milder side-effects than some of the earlier ones; the latter (e.g., rauwolfia alkaloids) are best avoided, even if they are therapeutically effective and inexpensive. This may cause difficulties for some of the developing countries, where the limited resources available for health care make cost an important factor in drug selection.

However, there are two well known forms of inappropriate use, of which the first is their administration to political prisoners who have been "diagnosed" as psychotic. The extent of such use is far from clear but it appears to be widespread. The second is the excessive use of neuroleptics, particularly in terms of dosage, as a means of restraining troublesome patients in mental hospitals in developing countries affected by problems of staff shortages. This is not to suggest that physical restraint is any more appropriate, and no better alternative may be possible if staff shortages are unavoidable.

In some countries, small doses of those neuroleptics having the fewest side-effects have been used extensively for the relief of anxiety. The fact that they are virtually free from any risk of dependence favours their use, but the majority of studies have indicated that these substances are not so effective in the relief of anxiety as the classical anxiolytics (Greenblatt & Shader, 1974).

The antidepressants

These include several different groups of chemicals, (see Table 1). Depressive illness is a serious condition that consumes vast medical resources, disrupts the sufferer's personal and working life, and may have a fatal outcome; it is estimated that at least 50% of all suicides are suffering from depressive illness (Leigh et al., 1976). However, the risk is much greater in severe depression and at least 15% of those suffering from manic depressive psychosis eventually die by their own hand. Thus, while minor degrees of depression often respond to understanding, kindness and practical help in dealing with the precipitating factors, this is not true of severe depressive illness, which requires medical intervention. Antidepressant chemotherapy is then the first choice.

There are four main classes of antidepressants, the first comprising the tricyclics, tetracyclics and related substances. Some act as sedatives in addition to their antidepressant effect, some appear to be neutral in relation to drive, while others show definite enhancement of drive and energy in depressed people. Each group has a place in the therapy of depression, depending on the symptomatology. Side-effects are often troublesome with the tricyclics, involving the autonomic nervous system in particular. Toxic reactions leading to death can also occur. The second group comprises the monoamine oxidase inhibitors, which are not just alternatives to the tricyclics, for studies indicate that they are valuable in the treatment of a different category of depressive patients. The liver toxicity and hypertensive food interactions of some of the earlier members of this group have caused them to be less widely used than would be justified by their therapeutic effects. The third group of antidepressants are the amphetamines and related substances. This group of substances is initially very effective in the relief of some types of depression but the majority of the compounds cause rapid tolerance, toxicity and severe dependence. Most of them are therefore no longer used for the treatment of depression, though they still have a place in the therapy of narcolepsy and infant hyperkinetic disorders, in which dependence does not seem to be a problem. Unfortunately, these stimulants are still used for the relief of depression by some doctors in both industrially developed and developing countries, and this use must now be regarded as inappropriate.

Lithium salts constitute the fourth group of antidepressants currently employed. They are mainly used in the prophylaxis of manic depressive disease (bipolar affective illnesses), and are often therapeutically effective. However, the narrow therapeutic ratio and the severity of the adverse reactions at high blood levels preclude their use when adequate facilities are not available for the routine estimation of lithium blood levels.

Concern about the problems associated with the use of the traditional hypnotic sedatives has led in recent years to an overuse of sedative antidepressants for the relief of insomnia. While, as will be explained shortly, they have a valid role in the relief of insomnia which is the direct result of depression, their use as general-purpose hypnotics must be regarded as inappropriate.

Hypnotic sedatives

These are one of the two types of psychoactive drugs, the use of which has been particularly controversial. They are divided into four main classes, the first being the early hypnotics, such as the bromides, chloral hydrate and paraldehyde; the problems associated with each of them led to a decline in their use. The second comprises the barbiturates which, despite their toxicity and dependence-producing properties, are still widely prescribed as hypnotics, particularly in those countries where cost is an important factor. They differ widely in their duration of action and safety, though few have a satisfactory therapeutic ratio. During the 1950s, because of the known toxicity of the barbiturates, the third group, the nonbarbiturate hypnotics were developed. They were safer than the barbiturates but still showed a substantial disposition to misuse and dependence. These, in turn, were followed by the benzodiazepines, which make up the fourth group. In overdosage, these are considerably safer than barbiturates and, even now, hardly any patients have died from an overdose of a benzodiazepine alone. However, the early belief that they were completely safe has not been borne out in practice, for although the risk of dependence is small compared with that of many other psychoactive drugs, it nevertheless exists, particularly with long-term use, even at accepted therapeutic dose levels. However, the benzodiazepines are still recognized as the drugs of choice for use as hypnotics (National Institute of Health, 1983) and, probably because of their comparative safety, have been used very extensively. While they have a definite and valuable role in the management of insomnia (National Institute of Health, 1983), inappropriate use is also seen, in terms of both the extent and particularly the duration of use, for, as already mentioned, tolerance and dependence do occur with prolonged continuous use. Sedative tricyclic antidepressants are now also used as hypnotics, and have a valuable and specific role when the insomnia (particularly early morning awakening) is a symptom of depressive illness; however, as explained above, their use as general-purpose hypnotics is inappropriate.

Anxiolytics (tranquillizers)

These are the other psychoactive drugs that have caused much medical and lay concern in recent years. Although small doses of phenothiazines have been used, it is now recognized that the benzodiazepines are also the drugs of choice for the relief of anxiety. They are rapidly effective and, as already pointed out, remarkably safe in overdosage, but suffer from a significant dependence risk with chronic use, even at normal therapeutic doses. Used appropriately, they are both effective and free from major problems. Currently, inappropriate use relates particularly to the duration and manner of their use.

Dependence liability

An overall assessment of the risk of the psychological and physical dependence and abuse liability of psychoactive drugs has been made by Isbell & Chrusciel (1970). Table 2 gives an updated version of this assessment, covering the classes of psychoactive drugs now used in therapy,

and also assesses the level of use, and the extent of the medical and social problems involved. For comparison, the risks of the "social psychotropics" (Office of Health Economics, 1975; Marks, 1978) are also shown.

Use in industrially developed countries

There are four main methods whereby the level of use of a therapeutic class or substance can be estimated, the first being to determine the value in monetary terms of the total amount sold. This is inaccurate since it takes no account of price differences, both within a given country and from one country to another.

The second method, which has been used extensively, is based on prescription audits (Boethius & Westerholm, 1976; Rickels, 1983). Since a prescription can be for a short or long period, the findings must be interpreted with caution. Fig. 1 shows the numbers of prescriptions for the various classes of psychoactive drugs used in therapy in the United Kingdom from 1960 to 1980. The classification of some drugs has been changed during this period, but the trends shown are nevertheless real. The most obvious change is a rise in the sedative tranquillizer group to a maximum in about 1975 and a steady fall since that time. Antidepressants showed a similar rise but have remained reasonably stable in the past few years, as have hypnotics. As might be anticipated, the use of central nervous system (CNS) stimulants has fallen dramatically, though part of this fall is due to the fact that most have been reclassified as appetite suppressants.

Table 2. Dependence, abuse liability, medical and social problems, and extent of use of psychoactive drugs and social psychotropics[a]

Class and representatives	Abuse liability	Medical and social problems	Current world use
Central nervous system depressants:			
barbiturates	+ + +	+ + +	+ +
bromides	±	+	±
chloral hydrate	+ +	+	±
meprobamate	+ +	+	+
methaqualone	+ + +	+ +	+
phenothiazines	o [?]	+	+ +
benzodiazepines	+ +	+	+ + +
Central nervous system stimulants:			
amphetamines	+ + +	+ + +	+
ephedrine	o[?]	o[?]	±
Antidepressants:			
monoamine oxidase inhibitors	o	+ +	±
tricyclics	o[?]	+	+ +
Social psychotropics:			
alcohol	+ + +	+ + +	+ + +
tobacco	+ + +	+ + +	+ + +

[a] Based in part on, and expanded from, Isbell & Chrusciel, 1970; see Marks, 1982.

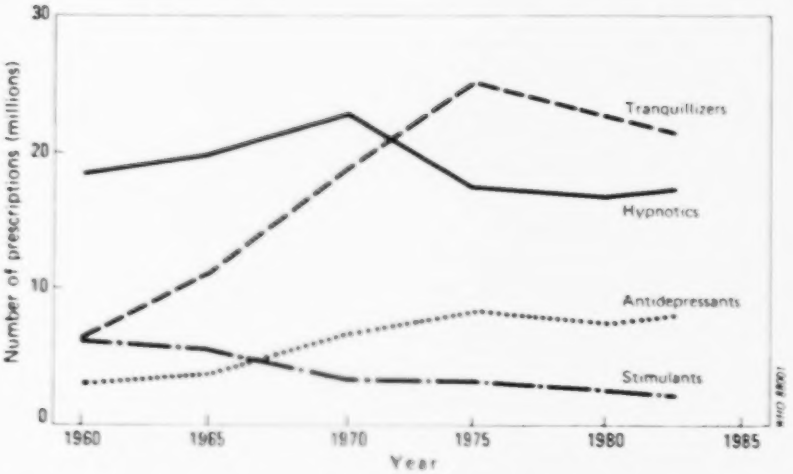

Fig. 1. Prescriptions for psychoactive drugs (in millions) in the United Kingdom from 1960 to 1982. Based on Department of Health figures derived mainly from the Office of Health Economics, London.

The third method of estimating the level of use is by determining the proportion of the population that is receiving the drug. This can be either the proportion that have used the drug at all over a defined period (often during the past year) or the point prevalence of use (namely, the number using it at the time of the study). The first method of determining the level of use gives a higher figure than the second, depending on the period over which the incidence is determined. This method has been used extensively in determining the extent of use of tranquillizers and sedatives, but less so for the other classes of psychoactive drugs. Thus studies reported in the early 1970s (Parry et al., 1973; Balter et al., 1974) found a level of new use of tranquillosedatives of approximately 15% in any year, of which benzodiazepines accounted for about 60%. Between 10% and 17% of the population in several countries in Europe had used tranquillizers and sedatives during the previous year and between 3% and 8% had done so regularly.

More recent figures (1979) have now been produced for the United States and show that the proportion of the population using tranquillizers and sedatives has fallen. It now also appears that rather less than one in ten of the population of many countries receives a prescription for a tranquillizer during the course of any one year and that about 50% of these will be receiving a benzodiazepine, giving an annual level of use for benzodiazepines of 5–6% and a point prevalence of about 2%. It is also known that women are prescribed tranquillizers about twice as frequently as men and that the elderly are more frequent users than the young (Mellinger & Balter, 1981; Mellinger et al., 1984; Balter et al., 1984; Marks, 1985).

However, raw data on prescriptions or the proportion of the population that are users take no account of the different drugs used in each country or the pattern of their use. For this reason, the method now adopted by WHO has much to commend it. This expresses the level of use in terms of

"defined daily doses" (DDD) per year per 1000 population (Lunde, 1977), which is particularly valuable when comparisons are to be made between one country and another and between one year and another with different prescribing patterns. However, even international comparisons based on the DDD may not be reliable. Patient audits show that the average dose used in different countries may differ markedly from the DDD.

The figures for the consumption of psychoactive drugs for several western European countries in 1980, expressed in terms of the DDD, are shown in Table 3. Consumption has changed in many European countries in a manner very similar to that seen in the United Kingdom and shown in Fig. 1. Such differences as do exist are largely explicable on the basis of local regulations.

However, even with the use of the DDD, errors may arise, for the proportion of neuroleptic drugs used as anxiolytics and sedatives differs even between countries that are close neighbours (Marks, 1983b). Thus any information on use must be treated with caution until all the factors involved have been studied.

It must also be appreciated that data on sales volume or from prescription audits do not reliably represent *use*. There is now considerable evidence from both the USA and the United Kingdom that patients actually consume far smaller quantities of psychoactive drugs than are prescribed (Marks, 1985). The situation in other countries is not clear. The other factor on which no information is provided either by sales data (however presented) or prescription audits, is unauthorized use. Even if, in the present context, illicit, "street scene", sales of psychotropics, are excluded, it is well known that psychotropics are used by people other than those for whom they were prescribed. Relatives and friends "borrow" hypnotics and tranquillizers, sometimes merely to cover periods when their own supplies are depleted, but sometimes to see if they are effective. By any definition, such use must be regarded as inappropriate, however well intentioned it may be. The extent of this inappropriate use is unknown.

Use in developing countries

Comments made at international conferences suggest that there is a substantial measure of inappropriate use and particularly overuse in developing countries. However, most of the information is anecdotal and there are very few published studies. Those that do exist, which are in any

Table 3. Therapeutic use of psychoactive substances in various European countries in 1980, expressed as defined daily doses (DDD) per 1000 adults[a]

Category	Denmark	Finland	Iceland	Norway	Sweden
Neuroleptics	9.63	9.68	5.91	8.42	10.26
Tranquillizers	40.78	19.63	24.23	22.64	21.86
Hypnotics	75.81	17.15	30.15	41.89	41.36
Antidepressants	10.18	4.05	11.25	8.51	7.75
Stimulants	1.01	0.89	0.67	0.18	0.69

[a] Based on Nordic Council on Medicines, 1981

case usually isolated and incomplete, tend not to support the view that substantial general overuse exists in any particular country (Table 4). However, such global figures conceal substantial inappropriate use, including:

(*a*) Overuse of psychoactive drugs to control troublesome patients when staffing levels are inadequate.

(*b*) Use of inappropriate psychoactive drugs due to difficulties in diagnosis with the limited facilities available.

(*c*) Sales in the market place of therapeutic substances that are derived either from illicit sources or licit prescriptions for patients.

(*d*) Inappropriately low dosage or short duration of administration due to financial constraints.

(*e*) Use of less suitable psychoactive drugs because appropriate drugs have not been licensed locally.

Unfortunately there is no reliable information as to the extent of any of these types of inappropriate use, and it therefore remains conjectural.

Medical benefits

Neuroleptics

Since normal doses of neuroleptics (as opposed to the low doses used as anxiolytics) are used for the treatment of specific and defined psychoses, the use of such drugs is usually justified in industrially developed countries (inappropriate use in prisons and hospitals has already been mentioned). Diagnostic criteria for the use of neuroleptics are clear and the need for long-term therapy established. The main concern is with extrapyramidal symptoms on long-term use and there is a need for improved medical training on the management of these symptoms. On the other hand, the alternatives (e.g., strait jackets, etc.) are arguably less appropriate.

One possibly inappropriate type of neuroleptic use has emerged recently and is evidence of the fact that what is considered to be appropriate may change as society changes. The use of neuroleptics in the period

Table 4. Therapeutic use of psychoactive substances, expressed as defined daily doses (DDD) per 1000 adults in certain countries[a]

Country	Year	Substance	DDD per 1000 adults
Argentina	1983	Benzodiazepines	14.5
Brazil	1984	Benzodiazepines	4.5
Greece	1979	Benzodiazepines	6.7
Mexico	1983	Benzodiazepines	1.9
Thailand	1981	Diazepam	3.8
United Kingdom	1979	Benzodiazepines	18.7
USA	1982	Benzodiazepines	21.8

[a] Based on Khan et al., 1981, Edmondson et al., 1982, and Strika et al., 1981.

1954–1970 allowed a substantial proportion of schizophrenics to live effectively and independently in the community. However, the current world recession and the resulting shortage of resources for community care has meant that this group now suffers badly when discharged into the community and is condemned to life in a ghetto or in prison. Under these circumstances, prescription of neuroleptics, resulting in discharge from hospital in preference to a comfortable life in a caring institution, may represent inappropriate use from the social point of view.

In the developing countries there is clear evidence of both underuse and inappropriate use of neuroleptics. Underuse stems from difficulties experienced with side-effects when adequate follow-up is difficult, from problems of diagnosis, and also from economic difficulties. Inappropriate use stems from diagnostic difficulties; a clear diagnosis is not made but a "cocktail" of several psychoactive drugs is administered, representing both a waste of resources and an increased risk of drug interactions.

Antidepressants

There can be few who do not accept the medical value of the use of antidepressant drugs. Most estimates suggest an incidence of depressive illness in the general population of between 2 and 5%, about 0.5% of the population developing morbid depression each year (Leigh et al., 1976). Though these figures are derived mainly from studies in industrially developed countries, there is no reason to believe that incidence in developing countries is significantly different. The level of use correlates quite well with the incidence.

Although medically inappropriate use does occur as a result of misdiagnosis, the pattern in developed countries is usually one of underdiagnosis. Misdiagnosis of anxiety in a patient with depression is rather common. As a consequence, it is clear that there is much more likely to be underuse of antidepressants rather than overuse. Misuse of, and dependence on antidepressants are virtually unknown, though withdrawal reactions can occur on abrupt cessation of use. There is limited overuse of antidepressants as general-purpose hypnotics and in multiple drug use when diagnosis is inadequate.

There is much more concern about the underuse of antidepressants in developing countries, although inappropriate overuse can also occur. As with the neuroleptics, there is a tendency to substitute multiple drug administration for adequate diagnosis and specific therapy. This arises in part from diagnostic mistakes, but far more from lack of adequate funding for maintenance use of antidepressants. The common pattern of therapy in these countries is of about one week's drug treatment, in the expectation that an improvement will be seen during this time. With antidepressants, however, improvement is rare under at least 10 days and this aggravates the problem of inappropriate use, leading to a too early abandonment of therapy in some patients and prolonged ineffectual use in others.

Hypnotics

The rationale for the use of hypnotics was discussed late in 1983, when the National Institute of Health, Bethesda, MD, USA, held a consensus

development conference on "Drugs and insomnia: the use of medications to promote sleep" (National Institute of Health, 1983). Some 30% of the population complain of sleeping difficulties, of whom about half, i.e., about one-sixth of the adult population, consider the insomnia to be serious. Of those with serious insomnia, about half report a high level of emotional distress, yet only 10% receive prescribed hypnotics and a further 4% use "over-the-counter" products. On the other hand, there is substantial anecdotal evidence from many countries of the administration of hypnotics, often for prolonged periods, to individuals who have no true sleep problem or, at the most, only a transient one.

Psychotherapy, behaviour therapy and pharmacotherapy in combination provide a comprehensive treatment plan for insomnia and, for pharmacotherapy, a benzodiazepine is almost always the preferred drug. As with all drugs, patients should receive the smallest effective dose for the shortest clinically necessary period, but the safety of the benzodiazepines has encouraged use for inappropriately long periods. The choice of benzodiazepine should be based on the pharmacokinetic properties (i.e., the duration of action) coupled with the needs of the patient. A rapidly eliminated benzodiazepine may be preferable if significant anxiety is not present, particularly if it is desirable to avoid unwanted daytime sedation. For other patients, particularly those with anxiety, a slowly eliminated member of the group may be preferable.

Anxiolytics

Justification also exists for the medical short-term use of anxiolytics. Several recent studies have shown that significant psychiatric morbidity occurs in about 30% of the population of developed countries in any one year, and that the point prevalence is about 15%. Of this morbidity, morbid anxiety accounts for the major share (Marks, 1980). Only about half this morbidity is recognized by medical practitioners, so that the current level of prescription of tranquillosedatives (annual level about 10%) is low rather than high, compared with the level of morbidity, and does not suggest inappropriate initial prescribing in the community as a whole.

Conclusions

The fact that the proportion of the population receiving a particular group of drugs is the same as that suffering from the disorder that those drugs are used to treat does not indicate that the right patients are necessarily being treated. Evidence (reviewed by Marks (1983b)) of appropriate use is available for the tranquillizers but, on the other hand, it is clear that there is substantial inappropriate use in individual patients, including use for the wrong medical condition, dosage that is too high, administration for periods that are too long, or inadequate medical surveillance (Marks, 1985).

Specifically, psychoactive drugs are currently used to a substantial extent in physical disorders. When there is a psychosomatic component, such use may be justified, but in other disorders (e.g., pain) there is no such justification. The extent of this inappropriate use has not been quantified and the evidence for it is largely anecdotal.

The main problem is that of the administration of anxiolytic drugs for excessively long periods, which is associated with an increased risk of dependence. Long-term use of such drugs may be justified in some of the patients concerned, but unfortunately recent studies demonstrate that such use is being prolonged without adequate medical care (Marks, 1983a) and often with inadequate medical justification.

Social benefits

Until recently few would have disputed that the neuroleptics, which enabled patients with severe psychoses to return to the community, were anything other than socially beneficial. It has already been noted that the world financial crisis has meant that the weaker members of society have suffered most and that at the present time vast numbers of schizophrenics are living at best in poverty in ghettos and at worst in prison. Hence the social benefit of the use of neuroleptics is now much less clear, demonstrating that the social benefits of drugs are not solely the consequence of their therapeutic value but are influenced by the environment in which they are used.

There are very few who do not accept the social merits of the use of antidepressants, nor has it been suggested that the administration of these substances interferes with the rational relief of a dangerous disorder.

To date there have been relatively few cost–benefit studies in therapeutics (Teeling Smith, 1983), but a notable early one deals with the replacement of electroshock by antidepressants in Switzerland (Brand et al., 1975). It is thus possible to obtain some estimate of the possible benefit of these drugs in monetary terms.

The replacement of electroshock by antidepressants increased working capacity and reduced hospitalization costs. There was a 50% reduction in the cost of treatment, and 220 000 new cases per year, for whom no treatment facilities had previously existed, could now be treated. From the social viewpoint, the advantages of keeping in touch with the normal environment were considered greater than the possible disadvantages of antidepressant treatment. Thus the balance of evidence favoured the antidepressant drugs.

The social benefits of the use of hypnotics are far less clear. It would be necessary to show that there is social detriment from insomnia *as encountered in practice* and that this is corrected by the use of hypnotics. Sleep deprivation for one night produces little reduction in performance, but the effect increases with sleep deprivation for longer periods and is most marked with boring, repetitive tasks. Social studies in clinical practice, at home and at work, on residual performance deficit, hangover and automobile and machinery accidents, are almost entirely lacking. This is an area in which the information necessary for making a valid measurement is lacking.

Sociologists have claimed that people are being prescribed tranquillizers which they do not need (Twaddle & Sweet, 1970), that social solutions are not being sought (Koumjian, 1981) and that stoicism in the face of discomfort may no longer be a fashionable virtue (Tessler et al., 1978).

Too few good studies of the social features of the use of tranquillizers have been conducted for a firm conclusion to be reached. The current evidence in the United Kingdom is that tranquillizers are not being prescribed for social ills (Williams et al., 1982), while studies in the United States (Tessler et al., 1978) have indicated a sensible and realistic approach to the use of these drugs; tranquillizers have been perceived both as having the potential for improving the general quality of life (Whybrow et al., personal communication 1982) and as having no harmful social consequences (Proctor, 1981). On the other hand, it is abundantly clear that a substantial proportion of patients who consult their practitioners with psychological disturbances are really facing difficult political, social and economic problems, the symptoms that are presented being only the end results of the inability to find appropriate solutions. This particular aspect has been stressed, *inter alia*, by Cooperstock (1976), Williams et al. (1982) and Koumjian (1981).

The implications of the use of tranquillizers should also be viewed in the light of the social alternatives for stress management. In males it is known that alcohol may be used as a form of self-medication (Parry et al., 1974; Mellinger, 1978) and an alternative to tranquillizers, and that a reduction in the use of tranquillizers is associated with an increase in the use of alcohol.

The view that the administration of psychoactive drugs retards social solutions might be more acceptable if such solutions were available. However, as Mellinger (1978) has pointed out, those in distress who are refused treatment seek solace elsewhere and "society often does not provide a great deal in the way of viable alternatives that are much better".

Nevertheless, it is a debatable point whether the absence of political, economic and social solutions to these problems makes such administration appropriate in the long term, even if it can be regarded as pragmatically expedient in the short term.

Conclusions

From this brief review, it will be seen that, in industrially developed countries, there is evidence of extensive prescribing of the various classes of psychoactive drugs. The initial prescription appears, in general, to be rational and conservative, although there are substantial areas of inappropriate use. The medical problems appear to lie mainly in two areas: firstly in difficulties in psychiatric diagnosis and secondly in excessive length of treatment, and particularly the unmonitored prolonged use of tranquillizers and hypnotics.

In the developing countries, the true picture is far from clear. The use of psychoactive substances is probably, in general, inappropriately low, in part due to diagnostic problems but in the main to economic difficulties. On the other hand, there is substantial anecdotal evidence of inappropriate overuse in developing countries, particularly as a consequence of poor diagnosis, leading to the unnecessary use of several drugs.

Overall, it appears that there are some who need psychotropic drugs but do not receive them, and some who receive them but do not need them.

It follows that there is a general need for the training of doctors, paramedical personnel and the general public on various aspects of the

medical use of psychoactive drugs; for doctors on better diagnosis and how best to use pharmacotherapy as part of the overall treatment of mental illness; for paramedical personnel on what can be achieved by, and the problems of psychopharmacotherapy; and for the general public on more realistic expectations concerning the use of drugs and the role of other methods of treatment.

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3. Factors influencing prescribing

In most countries a prescription from a health professional is usually required in order to obtain psychoactive drugs. Thus, to understand psychoactive drug use and misuse, the behaviour of prescribers is important. Prescribers of psychoactive drugs are usually physicians, and only their prescribing practices are discussed here.

Interest in studying prescribing in general, and of psychoactive drugs in particular, increased in the 1960s, when considerable concern was expressed about the overuse of drugs; since then, several studies and reviews have been published. The purpose of this chapter is to provide a framework for considering the many factors that influence prescribing and to present some conclusions drawn from the literature. A large number of studies in different languages have been published, but only comprehensive reviews and selected empirical reports in English, German and the Nordic languages have been covered here. The reviews by Christensen & Bush, 1981; Hemminki, 1975a; Hemminki, 1976; Herman & Rodowskas, 1976; Miller, 1974; Parish, 1971; Parish, 1974; Stolley & Lasagna, 1969; Worthen, 1973; and the book by Blum et al., 1981, were especially useful and are frequently referred to.

Prescribing involves a number of decisions: when and how much to prescribe, what to prescribe and how to prescribe. The question of how to prescribe often includes technical, medical, pharmaceutical and economic issues, such as: was the best drug chosen, was the dosage right, and was the price taken into account? These issues are important and sometimes crucial in health and cost terms. However, especially in the case of psychoactive drugs, the decision whether to prescribe or not, is more important, and will be emphasized here. Because much prescribing is a matter of re-filling or re-issuing a previous prescription, the process of stopping a patient's drug use is an important but rarely studied aspect. It may be that the factors that determine repeat prescribing are different from those that determine initial prescribing for a patient.

Because the factors influencing prescribing are not specific to psychoactive drugs, studies on the prescribing of other types of drugs or of drugs in general are included. Unlawful prescribing is not discussed.

The terminology of psychoactive drugs is often not clearly understood. For example, terms like "psychoactive", "psychotropic", and "psychotherapeutic" are often (incorrectly) used synonymously. In accordance with the recommendations of WHO and the United Nations Commission on

Narcotic Drugs, the term "psychoactive drugs" will be used here to identify drugs, which, as compared with others, have the power to affect aspects of mind and behaviour, including thought disturbance, mood, anxiety, cognitive performance and well-being.

Role of nonmedical factors

Psychoactive drugs are prescribed for "mental illnesses", and the health status of patients is a major factor in determining whether they receive such drugs. But in addition to these medical factors, nonmedical factors are also influential, because the indications for psychoactive drugs are not clear-cut (Jensen, 1983). It is in this context that the issue of the medicalization of social problems, i.e., their conversion into individual health problems, arises.

"Nonmedical factors" can be divided into two classes, namely *factors conditioning* prescribing (Fig. 2), and *individual factors*, i.e., those relating to the individual physician. The latter are the main topic of this chapter, although conditioning factors are important, and may affect the way that individual factors act at different times and in different countries. For example, prescribing practices may be very different in countries where drugs are subject to strict centralized control, so that there are numerous rules and few drugs, from those in countries without such control, so that there are few rules and numerous drugs. In the former, much of the thinking and decision-making is done collectively, before a practising physician decides to write a prescription. The strength of the national drug industry, and the powers of the state control authorities are two important conditioning factors (Bruun, 1983). The traditions and beliefs of the population may also modify patient pressures, as well as the views of physicians. What is considered health and illness by the local culture, and how they are differentiated, is affected by medical training. Lack of physicians, their maldistribution, or financial obstacles that prevent people from seeking medical care, may limit access to prescribers and drugs (unless drugs are distributed by nonphysicians, a situation that exists in many developing countries). As these examples show, despite the obvious importance of conditioning factors, inferences about their effects on prescribing are based more on informed guesswork and speculation than on factual evidence.

The division of countries into industrially developed and undeveloped and into socialist and nonsocialist is a crude way of characterizing them, but even within apparently similar countries, the factors conditioning prescribing may differ widely. The available experience and the published literature relate mainly to industrially developed nonsocialist, i.e., market economy countries and it is not clear how relevant they are to socialist countries; their relevance to developing countries will be discussed later.

Individual factors influencing prescribing are affected by conditioning factors. After a brief discussion of some general problems in studying these factors, conclusions will be presented on each individual factor, followed by a discussion of whether and why the factors are important. However, there are insufficient data to quantify the effects of each factor, either separately, or in relation to each other or to medical factors. The demands and expectations of pressure groups and society at large will not be discussed

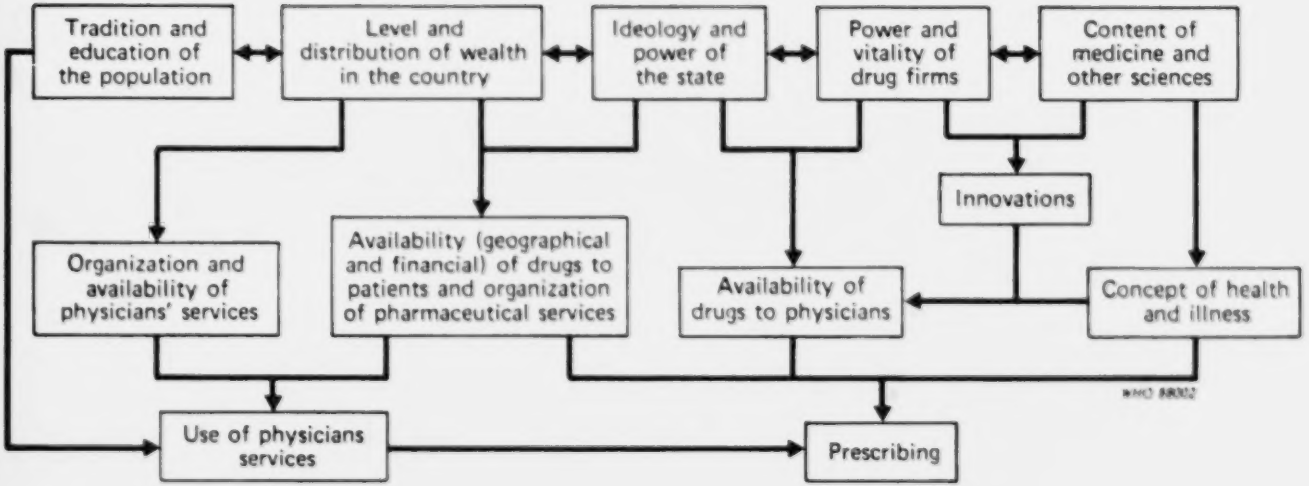
Tradition and education of the population
Level and distribution of wealth in the country
Ideology and power of the state
Power and vitality of drug firms
Content of medicine and other sciences
Innovations
Organization and availability of physicians' services
Availability (geographical and financial) of drugs to patients and organization of pharmaceutical services
Availability of drugs to physicians
Concept of health and illness
Use of physicians services
Prescribing

Fig. 2. Simplified model of factors that affect prescribing practices.

separately; many of the factors involved are shown in Fig. 2. In some countries, the media (television, radio, newspapers, magazines etc.) seem to be very influential in forming public opinion and in drawing the attention of the public to matters concerning health and drugs.

An important methodological problem is that the different factors are usually inter- related, so that disentangling the influence of one factor from that of others is difficult. Another problem is that physicians are not necessarily reliable sources of information about their own prescribing habits; what they think has determined these habits, or what they are willing to report, may not be what has actually happened (Avorn et al., 1982). Thus the information required often has to be collected indirectly. Studying the nonmedical factors that influence prescribing may be difficult because it implies a degree of criticism of the medical profession; many physicians like to believe that their behaviour is scientific and is determined only by medical factors.

Research and professional training

Medical knowledge is based on research, informal observations and practical experience. With the current emphasis on the scientific aspects of medicine, research results and the process of conducting research have become important, and the contents of scientific and medical journals consist largely of reports of research findings. To what extent such reports influence prescribing is unclear. There are occasions when research seems to have no effect on prescribing practices and others when the publication of research results has led to major changes in prescribing. It may be that research does not influence prescribing directly, although it may do so indirectly when drug control authorities, educators, and the drug industry become aware of new information. It also seems likely that the more the research results are in line with current thinking, the greater the impact the research will have.

In an ideal situation, professional training should be the decisive factor in prescribing: decisions on how to diagnose, when to treat, and how to treat, should all be based on professional knowledge, largely acquired during basic training and continuing education. Basic training can inculcate attitudes to, and skills in handling new information, and continuing education can help physicians to update their knowledge. The latter may consist of formal courses and bedside training, but more often takes the form of a meeting or an article in a scientific or professional journal.

However, observations from several countries suggest that this ideal situation does not exist in practice. Little is known about the parts of the curriculum that promote appropriate prescribing. It seems that the emphasis in basic training at the present time is on the biological basis of diseases and how to diagnose them. The teaching of treatment, including the prescribing of drugs, is more casual; quite often students learn by observing the behaviour of their teachers in bedside situations rather than through critical theoretical discussions of the principles of treatment. Some medical schools do have good programmes on pharmacology and clinical pharmacology, but teaching in these courses tends to concentrate on the drugs themselves, rather than as a part of therapy and in relation to alternative treatments.

Another problem, which especially concerns continuing education, is the influence of information from commercial sources. In many countries, drug companies, with their large resources, are very active in arranging continuing education. If the information from commercial and non-commercial sources is in disagreement, the former tends to be preferred. Yet another problem, closely related to that of resources, is the taking over of "noncommercial" continuing education by drug companies. In many countries where there is a great need for such education but the resources available to medical schools or to other noncommercial institutions are limited, drug companies are only too willing to help. As a consequence, much "noncommercial" continuing education is partly arranged and financed by drug companies, and the distinction between commercial and noncommercial information becomes blurred. Furthermore, many medical journals depend on drug companies for financial support, and this may influence their content. The final problem is that of educational theory. It often seems that non-commercial programmes are based on the assumption that, if knowledge is gained, behaviour will change accordingly. However, evidence from many fields has shown that a knowledge of facts and principles is neither necessary nor sufficient as a cause of changes in behaviour. An interesting example of this is given by Weiss & Hersowitz (1983), who found that while many physicians believed fever to be a defence mechanism, for which treatment is therefore not required, many of them reported using vigorous means to reduce fever in children.

Despite these problems, noncommercial training, if skillfully carried out, may be a valuable influence on prescribing practices (Alexander et al., 1983; Avorn & Soumerai, 1983; Gehlbach et al., 1984; Klein et al., 1981; Schaffner et al., 1983). An interesting finding is that, if a physician is shown what he or she has actually prescribed, and this is compared with the prescribing practices of other physicians, there appears to be an impact on prescribing (Douglas et al., 1982; Hamley et al., 1981; Rosser et al., 1981; Rosser, 1983).

The prescribing of psychoactive drugs may be especially sensitive to training. Many physicians feel incompetent to deal with mental illness, and training in that subject, together with therapeutic guidelines, may be more effective than training in subjects about which physicians feel competent and have their own therapeutic routines with which they are satisfied. Proper recognition of psychiatric illness and proper referrals to specialist care are important aspects of such training.

Training may be the primary method used to influence prescribing, or it may be used in conjunction with others. For example, after having undergone training on how a certain problem should be treated or drug prescribed, physicians may be willing to accept the corresponding control measures and act accordingly. Training may be directed to individual prescribers or, more efficiently, to respected "key" physicians, who will spread the information by their example and by other informal methods (see the section on colleagues and other health professionals).

The pharmaceutical industry

The pharmaceutical industry has a major impact on prescribing, both because decisions taken by the industry about research and development,

production, and distribution affect the availability of drugs, and also because of their dominant role in the dissemination of information (Avorn et al., 1982, Jensen, 1983, Strickland-Hodge & Jepson, 1982). Drug manufacturers invest 15–22% of sales revenue in drug promotion (Lall, 1981). Illuminating and frequently cited data from Sweden, where the state finances most of the cost of training health personnel, show that, in the early 1970s, the amounts spent by drug manufacturers on disseminating information were almost as great as the medical training costs (Table 5) (Lilja, 1975 p. 55). Even though these data are more than 10 years old the position in Sweden is still apparently the same.

Palmisano & Edelstein (1980) compared drug promotion costs in the United States with health care costs for young Americans. In the 1970s, drug manufacturers spent an estimated US$ 3000 per physician per year on drug promotion, whereas US$ 212 per person per year were spent on health care for the population under 19 years of age. These figures emphasize the disparity between the amounts spent by the manufacturers on drug promotion and by governments or others on health care. While this involvement of the drug manufacturers in the dissemination of information about drugs has its valuable side (see page 84), it does provide the opportunity to apply pressure for purely commercial purposes.

The pharmaceutical industry has several channels of influence, of which the *direct* ones are those most easily seen: mail and journal advertising, journals, calendars, catalogues, etc., pharmaceutical representatives (detail men), drug exhibitions, drug samples, drug discounts, patient aids, and different public relations activities (e.g., excursions, parties, and gifts). *Indirect* channels are less easily visible, but may be at least equally important: the financing of, and other assistance for, medical research; the financing of medical journals and associations; the financing and organization of medical training, especially postgraduate training; the production of educational material; personal contacts and relationships between leading physicians and drug companies. In only a few reports (Miller, 1974) has any attempt been made to quantify the influence of the drug industry. Drug manufacturers regularly carry out such studies, but the results are not generally available. It seems that in many countries the representatives of the pharmaceutical companies play an important role (Hemminki & Personen, 1977a); this is particularly true in developing countries. For example, in Brazil, there was one pharmaceutical representative for every three physicians in the 1970s (Table 6).

Table 5. Expenditure on commercial drug promotion and on certain other activities, Sweden, 1971 – 1973[a]

Item	Cost[b]	Year
Basic medical training	164.6	1971 – 1972
Commercial drug promotion	152.9	1971
Postgraduate training	1.8	1971 – 1972
Promotion of drug information by the Board of Health and Social Affairs	0.85	1973

[a] Source: Lilja, 1975 p. 55.
[b] In millions of Swedish kronor.

Table 6. Ratios of pharmaceutical representatives to physicians in certain countries[a]

Country	Year	Ratio
Bangladesh	?	1/7
Brazil	1970, 1974–75	1/3
Finland	1975	1/17
Mexico	1972, 1974–75	1/4
Nepal	~1979	1/3
Norway	1974	1/32
Sweden	1974	1/24
United Kingdom	1970	1/18
	1982	1/8
United Republic of Tanzania	?	1/4
USA	1970	1/14
	1974–1975	1/10

[a] Sources: Hemminki & Pesonen, 1977a, Melrose, 1982, Silverman & Lydecker, 1981, and Medawar, 1984.

Some studies have shown that leading physicians frequently have connections with and functions within the drug industry, such as serving on an administrative or scientific board (Hemminki & Pesonen, 1977b, Nilsson, 1980). These same physicians carry out research, teach other physicians, edit medical journals, serve on medical committees and the authorities responsible for reimbursing health costs, and may be in a position to influence the drug and health policy of the country concerned.

Another important channel of influence for drug manufacturers, the impact of which has been poorly studied, is the financing of medical research. Such financing influences what is studied, how, and by whom, and this may, in the long term, have a profound effect both on medical knowledge and the practice of medicine.

The drug industry is important not only because of the extent of its influence, but also because of the direction in which this influence is exerted. (For a case study, see Hemminki, 1977). The purpose of drug manufacturers is to make a profit, and this can be achieved either by selling more drugs, or by selling them at high prices (or both). Their interests may then be in conflict with the need to provide the best possible treatment of a particular disease. Many people are concerned about the content of commercial drug promotional material and in a number of countries the drug control authorities have begun to regulate the direct channels of influence. However, where such channels are controlled, the drug industry may then increase its investment in the indirect channels, which may be both more influential and harder to control.

The discussion so far has been concerned with drugs in general. What is peculiar to drugs for the treatment of mental illness is the ubiquitousness of such disorders, their diffuse nature and the lack of knowledge about them; this has provided especially favourable conditions for drug manufacturers to exert their influence, and many of the problems discussed above are accentuated in the case of psychoactive drugs.

Health authorities and insurance systems

The health authorities can influence prescribing through the planning and organization of the health services (including the availability and accessibility of health personnel), postgraduate training, and control measures. Only the last of these will be discussed here. Control measures can take many forms; they may operate by regulating drug research, the availability and marketing of drugs, and expenditure on them. Measures can be directed towards drug manufacturers, importers and physicians, as well as towards the drugs themselves. As far as the effect of control measures on prescribing is concerned, the issue is usually not whether they do have an effect, but rather what determines whether control measures are applied, and whether the effects are those that were intended. It is clear that, if a drug is not licensed, it will neither be generally available nor widely prescribed. Similarly, an effect will be achieved if the promotional material for a drug is considered to be unethical and is prohibited.

Although, in theory, control measures offer a useful means of influencing prescribing practices, the issue is in reality both complex and difficult. Firstly, it is widely accepted that, before control measures are introduced, the justification for them must be firmly established. This is different from the situation that exists in teaching, for example, when it is sufficient for the teacher to give an opinion but to leave the final decisions to the physicians concerned. In contrast, the introduction of control measures implies that decisions are being made for others, and the justification for them will therefore be open to challenge. Secondly, the control authorities will be powerless if society has not given them the necessary authority and resources, and if they themselves do not want or do not know how to exercise control. Thus, the crucial questions are, in what circumstances can good control measures be applied and what are good control measures? The study by Bruun (1983) has cast some light on the situation in certain countries. Centralized drug control, namely drug licensing, has been described in the reports by Falkum et al. (1983) and Hemminki & Falkum (1980), and examples of the impact of individual control measures on prescribing are given in the review by Sigler et al. (1984).

Not only the types of drugs licensed, but also the total number of drugs on the market, may influence prescribing. The smaller the number of drugs available, the easier it may be for the physician to familiarize himself with them and to deal with the "nonmedical factors", such as commercial drug promotion. Unfortunately, no studies have been conducted on the relationship between the number of drugs on the market and prescribing practices, but a study carried out in Finland (Hemminki et al., 1984) is interesting in showing that, in a country with about 2200 pharmaceutical specialities, many physicians did not know the composition of the drugs they had prescribed, especially when products containing more than one active ingredient were prescribed.

A system for the reimbursement of drug costs, either through state or private health insurance schemes, has been developed in some countries to alleviate the financial burden of illness. If such reimbursement is selective, however, i.e., if all drugs are not reimbursed similarly, this may have a marked impact on prescribing practice. Physicians, either on their own initiative or prompted by their patients or administrators, may then tend to

choose drugs for which patients will receive the maximum reimbursement. In addition, the inclusion of a drug in a reimbursement list may also act in its favour, because such a drug is perceived as "officially accepted".

Medicines committees are like drug licensing authorities in miniature; they have drawn up formularies which, at local level (i.e., in an institution or an area), determine which drugs can be prescribed, or which drugs should be given preference (Bomann-Larsen, 1983; George & Hands, 1983). Unlike licensing authorities, medicines committees do not usually need to explain their decisions to either drug producers or consumers, and they are run by physicians working in the institution or area concerned. As a consequence, they are flexible in their decisions, but also susceptible to outside pressures, such as commercial drug promotion. Medicines committees may exert their influence by restricting the availability of drugs, and by making the criteria for selecting drugs more explicit.

Colleagues and other health professionals

"Colleagues" in this context means physicians working in similar positions. Many surveys suggest that the opinions and actions of colleagues are important influences on prescribing. They may exert their influence through personal example and informal discussions and advice, or through administrative approaches, such as formularies (see above), the mandatory review of prescribing, the use of special prescribing forms, and resolutions passed by professional societies (Christensen & Bush, 1981; Durbin et al., 1981; Gehlbach et al., 1984; Greene & Dupont, 1973; Huber et al., 1982). Certain physicians are "gate-keepers" at national and local levels; their opinions and practices are passed on to other colleagues working with them, and also to physicians in general, if they choose to publish their views in the literature. These physicians often work as teachers and in control authorities, or within the drug industry. The influence of health professionals other than physicians, such as nurses and pharmacists, on prescribing by physicians has been little studied, but some surveys (Miller, 1974) and observations in practice suggest that nurses in hospitals may have a marked effect on the prescribing of drugs for symptomatic treatment, but that pharmacists have little influence. However, in view of the clinical interests of pharmacists in some countries (Burkle et al., 1982; Thompson et al., 1984; Schweigert et al., 1982) and their growing participation in medicines committees and in other control bodies, the influence of pharmacists may increase in the future.

Patients

Nonmedical attributes of patients which may influence prescribing include their personal characteristics, both in isolation and in relation to those of the physician, their demands and their expectations of therapy. Age, sex, marital status, family role (e.g., child-rearing, employment outside the home), family structure, education, and ethnicity are some of the potentially important patient characteristics. In the case of psychoactive drugs, the best studied patient characteristic is the sex of the patient; physicians tend to prescribe psychoactive drugs more frequently to female patients, and this

relative overprescribing does not seem to be explained by medical factors (Cafferata et al., 1983; Cooperstock & Hill, 1982). It is possible that other patient characteristics and certain features of the doctor–patient relationship may also influence prescribing, although fewer studies have been carried out on these aspects. For example, the patient's trust in his or her physician, and the ease with which they communicate with one another may be important. Physicians often say that patients demand drugs, and that patient pressure is hard to resist. This has certainly been claimed for antibiotics, and has also been said to influence the prescribing of psychoactive drugs. The effect of patient pressure has not been well documented in research literature, and there are suggestions that it has been exaggerated. Patient pressure may, in fact, be created by physicians' prescribing habits. Thus, if patients find that a visit to a physician usually ends up with a prescription, that experience reinforces their expectations. Another problem is that of patients who "shop around" for physicians to prescribe the psychoactive drugs that they are determined to get, usually either because of drug dependence or to earn money by selling drugs.

There do not appear to be any studies on the influence of other lay people, such as relatives and employers, but it is quite possible that relatives do influence prescribing, especially in the case of patients not fully responsible for themselves, such as the young and the very old.

The physician's characteristics and working conditions

The effect of other influences on the prescribing of an individual physician depends on his or her characteristics and working conditions. A physician's characteristics include both nonprofessional (e.g., age, sex and personality), and professional ones (e.g., specialty, education and experience). The only finding in the literature as to the influence of the physician's characteristics on prescribing is that such an influence does exist (Haayer, 1982; Hadsall et al., 1982; Hartzema & Christensen, 1983; Heiman & Wood, 1981; Keele & Freeman, 1983; Peay & Peay, 1984; Rudestam & Tarbell, 1981; Segall & Hepler, 1982; Staudenmayer & Lefkowitz, 1981). It is difficult to come to any conclusions, however, because the available literature is scanty, studies have encountered methodological problems, and the results are often not generally applicable. The ability to diagnose mental illness is important, because it will affect psychoactive drug prescribing. This is partly learned during training but also depends on personality factors, such as extroversion and self-confidence. A factor that has been little studied, but one that is probably important in some countries, is the degree to which physicians themselves use psychoactive drugs (Stimson et al., 1984).

Another important characteristic is how a physician sees his role and professional tradition. The right to prescribe and the knowledge of how to prescribe drugs has traditionally been an important indicator of professional status, and is still an important privilege of physicians, separating them from lay people. The magnitude of the need to reinforce one's professional status is important in determining prescribing practices. The pressure of work and the time available for each patient and for other tasks, are also important factors in determining prescribing practices as are the availability and feasibility of alternative treatments and of referral to specialists. In many countries, physicians are overloaded with fragmentary

and often biased drug information provided by drug manufacturers. The physician's characteristics and circumstances relevant to the handling of this material may be of crucial importance in prescribing.

The overall situation

Some of the different factors influencing prescribing have been described above, but the importance of each such factor depends on the context. What are the conditions in which prescribing occurs (for factors conditioning prescribing, see Fig. 2), what are the other individual factors, what disease is being treated, and what drug is being used? This complex situation may explain, for example, why the literature does not reveal any coherent picture of the influence of the physician's characteristics. Prescribing varies markedly as between one country and another (Hemminki, 1975a, 1976); much of this variation is difficult to explain purely in terms of medical factors, or of any single nonmedical factor. Hemminki (1984) has provided an example of such a variation with type of disease. While the drug industry is usually considered to be an important influence on prescribing, this did not seem to be the case in the prescribing of diuretics during pregnancy in Finland.

Special features of developing countries

As pointed out in the introduction, the published literature is based on experience in developed, capitalist countries, although many of the conclusions apply to nonsocialist developing countries as well.

In some respects, many developing countries are caricatures of developed countries (Gustafsson & Wide, 1981; Medawar, 1979; Medawar & Freese, 1982; Patel, 1983). The proportion of the health budget used for drugs is much higher in developing than in developed countries (Patel, 1983 p. 197). Owing to the international character of medicine and drug marketing, many problems of prescribing are similar in both types of countries. The combination of the scarcity of national resources, underdevelopment of health care, medical training and drug control, and the active involvement of foreign, wealthy drug manufacturers, has caused physicians to be strongly influenced by commercial drug promotion (Beardshaw, 1983; Lall & Bibile, 1978; Silverman, 1976; Silverman & Lydecker, 1981; Silverman et al., 1982).

Conclusions

The adequacy of the information on factors influencing psychoactive drug prescribing depends on the purpose for which the information is going to be used. If the aim is to understand the phenomenon of drug prescribing, the information is inadequate in many respects. For example, the behavioural aspect of prescribing is poorly understood, and very little is known of reinforcement contingencies, the stimulus properties of the occasion of prescribing, or the consequences of prescribing. But if the purpose is to formulate a drug and health care policy, existing knowledge of certain factors can be helpful. It is noteworthy that those factors easily modified by administrative measures, such as commercial drug promotion, training, and the extent of control, are better known than other, less easily modified

factors. In many countries, interventions aimed at improving prescribing could be started without further studies of these easily modifiable factors. But studies are urgently needed on the best strategies for intervention and the problems following such intervention. Studies are also needed on the motivation and behaviour of decision-makers. If the apparent lack of studies on factors influencing prescribing in socialist countries is not due to language barriers or to problems affecting the availability of reports, there may be a need to encourage research on prescribing behaviour in these countries. Comparative research on prescribing practices in different countries might also produce valuable information.

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4. Principles of rational prescribing

Medical school training tends to focus on the diagnosis and treatment of disease states. When the physician graduates to the world of clinical practice, however, patients may present with complaints related to known disease states less frequently than with complaints of tension, insomnia, headaches, depressive symptoms, anxiety and the like which reflect life stress and are not part of any known disease. Lack of training in how to respond to such complaints may result in poor prescribing practices. In addition, physicians are frequently not trained in how to respond to patients who misuse medication or who seek to obtain medication for the purpose of intoxication, or perhaps for illegal sale. In this chapter, the principles of proper prescribing are reviewed in response, firstly to patients complaining of life stress, secondly to patients whose complaints are related to disease states, and finally to "doctor shoppers".

Prescribing for patients who may be suffering from stress

The most fundamental decision with regard to anxiety and/or somatic complaints diagnosed as expressions of stress rather than of disease states, is whether to prescribe drugs or to adopt some other means of responding to the stresses concerned. More often than not, nonpharmacological means, such as counselling, will be both applicable and effective, and without risk of drug misuse or drug dependence. The decision to treat with drugs should be based on a clinical determination that the patient's psychological and social resources have been, or are in danger of being, overwhelmed; for example, a sustained period of inability to sleep following the death of a loved one represents a typical case in which pharmacological treatment of insomnia may be considered. The clinical question is, can this patient, within the limits of the available resources, regain equilibrium without drug therapy? If the answer is yes, and particularly if the answer is yes with relatively bearable suffering or with relatively little discomfort, then nondrug approaches are indicated. Counselling or participation with others undergoing life stress in self-help groups, or still other approaches discussed elsewhere in this publication may be tried before drug therapy is attempted. If the answer is no, then the next clinical question is, what are the dangers to this patient from drug treatment? If the risks and benefits are carefully assessed, then the decision to treat or not to treat with psychoactive drugs will emerge from the assessment.

If it is decided to treat a patient with drugs for symptoms related to life stress, the following principles should be observed:

1. There should be a clear target symptom or symptoms that the drug is known to affect, e.g., insomnia, anxiety, restlessness or the like.

2. It should be clear to the patient that the treatment is for a limited period of time, e.g., until natural defences can take over. This period may be related to the pharmacological properties of the drug employed, e.g., it takes 2–3 weeks for dependence on barbiturates to develop; or, in a patient who has not previously abused alcohol or used central nervous system depressants, it may be 20 weeks or so until physical dependence on long-acting benzodiazepines, in therapeutic dose ranges, begins. This is a natural pharmacological window and illustrates the kinds of factors that determine the length of the period. Another example is the rapid appearance of tolerance to many sedative hypnotics.

3. The patient should be monitored, both for general progress and specifically to assess the effects of the drug on the target symptom. The response should be measured and entered in the patient's records.

4. The patient should be informed of possible side-effects, e.g., morning dullness after taking sedative hypnotics; effects on driving performance after taking tranquillizers or sedative hypnotics; effects on the fetus if pregnancy occurs while patients are taking psychoactive drugs; hypotension caused by phenothiazines, etc. The occurrence of side-effects and the measures taken to respond to them, e.g., reassurance that they are temporary or perhaps a reduction in the dose, should also be entered in the patient's records.

5. The physician should be aware of all the drugs, both medical and nonmedical, being taken by the patient and the possible interactions, e.g., between alcohol and drugs with sedative properties. Synergism, the multiplicative effect of drugs when taken together, is a possibility for which the clinician must be constantly on guard. Many drugs taken for a variety of conditions, such as hypertension, interact with psychoactive drugs either to enhance sedation or to cause hypotension. Reading package inserts as a routine is a good practice in this regard. Other reference works also carry information on interactions.

6. The physician should monitor for use and misuse, and should specifically ask when the patient has taken the drug and how much of it has been taken. It is commonplace that patient compliance varies. The physician should always be alert to the possibility that physical and/or psychological dependence may occur. The possibility that drugs may be obtained for sale and/or intoxication is discussed later.

7. As little of the drug as possible should be prescribed, based on an assessment both of how much of it is required to affect the target symptom and of the patient's social, psychological and geographical situation, e.g., a patient from a rural area who must make an arduous journey to obtain treatment will require a larger supply than one with easier access to a pharmacy.

8. If at all possible, family members should be involved as part both of the management plan and of the monitoring. Family members may sometimes dissemble and work together to obtain drugs for illegal sale or intoxication, but this is unusual. They usually play an important part in adequate prescribing and monitoring.

9. Although suicide is more frequent in patients with diagnosable depressive disorders, a relationship between suicide and such a disorder does not necessarily exist. Rapidly escalating life stress frequently triggers suicidal thoughts and behaviour. The physician who prescribes psychoactive drugs risks abetting potential suicides and must be aware of this possibility. A history of previous suicidal thoughts or attempts and a family history of suicide are important indications of possible suicidal behaviour. Such patients should be specifically asked about suicide and, if it is a possibility, the clinician must limit the amount of psychoactive drug prescribed and should also construct a regimen in which there is frequent clinical monitoring and also, if at all possible, monitoring by family and friends. Talk of suicide should always be taken seriously. The physician should be alert to respond by hospitalization if the clinical situation of a patient with suicidal potential deteriorates. If there is severe physical or psychiatric disorder and, in particular, a history of substance abuse, the risk of suicide is high.

10. The physician should always take a history of substance abuse. A past history of alcoholism, for example, is often present in patients liable to misuse drugs. However, a history of alcoholism or drug abuse does not preclude the use of psychoactive drugs for diagnosed psychiatric disorders, but the level of control and monitoring must be greater and such monitoring more frequent than would otherwise be necessary.

11. The drug or drugs with the least potential for abuse should be used for any given indications.

Prescribing for patients with diagnosable disease states

The general principles of prescribing for diagnosable diseases are sufficiently different from prescribing in response to life stress to warrant separate treatment. Thus the time limitation may be completely inappropriate. Some disorders, such as phobic states, panic disorders, recurrent depressive episodes and the like, may require long-term therapy with drugs which have a definite dependence liability, such as the benzodiazepines and some antidepressants. The clinician needs to monitor such cases carefully and to discuss with the patient and the family the possible development of physical dependence. With most such patients, physical dependence is not a problem if the dose is tapered off when the drug is no longer needed or a drug "holiday" is being taken.

When a diagnosable syndrome amenable to psychoactive drug therapy is being considered, a judgement based on the cost–benefit ratio must be made. Will the patient suffer more from the disorder than from the possible risks of the medication? In some instances, e.g., severe panic disorders, it is reasonable to conclude that the long-term administration of the drug is well worth the risks of minimal drug dependence, because the degree of

dependence which develops at therapeutic dose levels can be managed by careful monitoring and by simple tapered withdrawal. Such withdrawal does not usually lead to patient discomfort or to drug-seeking behaviour when the drug therapy is terminated.

A parallel problem may be encountered in treating patients with chronic, severe pain from irreversible disease; in this instance, the objective is the relief of pain with minimal obtundation. Production of drug dependence of the opioid type is inevitable but in most cases clinically irrelevant. Proper management of these patients also requires careful monitoring both of the effects of the drugs on the target symptoms and of the side-effects.

The principle is that psychoactive drugs should be used for diagnosable diseases on a short- or long-term basis depending on the chronicity of the disorder. Fear of development of dependence, or of abuse or possible resale of the drugs prescribed, should not prevent the physician from providing the indicated therapy. Fear of these possibilities should rather be the motive for careful monitoring, not only of the progress of the drug regimen but also of the person to whom the drugs are prescribed. It is also important for the physician to keep up with the literature. For example, many psychoactive drugs, e.g., the benzodiazepines, are metabolized much more slowly by the elderly than they are by younger patients. This has only been widely realized in the last decade or so. The difference in age and in metabolism is clinically meaningful and requires dose reduction and more frequent monitoring in the elderly than with younger patients. For insomnia in the elderly, the use of sedatives or drugs with sedative properties, e.g., phenothiazines, antihistamines, antidepressants, etc., 2–3 times per week instead of on a daily basis may be a way to avoid the possibility of physical dependence while still providing relief for what is frequently a trying clinical problem. The same strategy is, of course, applicable in any clinical situation in which the aim is to avoid physical dependence or perhaps just not to provide too large a drug supply.

Numerous drug interactions, as noted above, dictate that drugs should be prescribed only after the data from the history, physical examination and laboratory results have been reviewed and a diagnosis established, and the costs and benefits of a particular therapy assessed. The attitude that addiction is to be avoided at all costs, cannot be justified. When such an attitude does determine clinical decisions, it frequently causes much unnecessary suffering.

Manipulative patients

The terms "doctor shoppers" and "patient hustlers" used in this chapter refer to people who are not suffering from a disease or, if they are, use this fact to obtain drugs for intoxication or resale, not as a legitimate means of relief of symptoms.

Patients with diseases or mental disorders who fail to comply with prescribed regimens constitute one part of the prescribing problem. Another and more difficult part concerns people who seek psychoactive drugs for the purpose of intoxication and/or resale. This latter group of patients will exploit physicians in any way they can. Knowing that the medical profession is vulnerable in responding to problems related to life stress, patients will sometimes present themselves as having suffered per-

sonal loss or other life stress in attempts to obtain psychoactive drugs. Such patients usually prey on clinics with a large volume of patients where assessment is minimal.

Physicians who prescribe drugs properly, that is, only on the basis of an adequate history and physical examination, are less frequently targets for such patients. "Doctor shoppers" and/or "patient hustlers" know that these physicians are much more likely to detect deception and less likely to prescribe inappropriately or on the basis of an inadequate history, physical and laboratory examination.

"Doctor shoppers" will also feign medical or psychological illness to obtain prescriptions for psychoactive drugs. Renal colic, tic douloureux, toothache, migraine, etc., are typical illnesses which the manipulative patient may simulate. The list is limited, in fact, only by the imagination of the manipulator. In some instances, they may actually produce lesions, and/or resort to ruses such as pricking themselves with needles and then dripping the blood from the wound into urine.

Some clinical clues to the possible presence of such a patient are as follows:

1. The transient patient. Such patients are frequently from "out of town" and have lost or had their medication stolen. They will try to create a sense of urgency and will put pressure on the physician to make an immediate response by claiming to be suffering from intense pain. It can frequently be detected from ordinary clinical intuition that there is a large discrepancy between their assessment of the severity of the pain and the pain that they are probably experiencing, if indeed, they have any pain at all.

2. The patient whose manipulativeness is detectable by observation. For example, if the physician has the feeling that his or her responses are being studied by the patient as intensely as the physician is studying the patient's situation, suspicion should be aroused that a "doctor shopper" or "patient hustler" is at hand. The ordinary patient does not study the physician's responses in the same way, and the difference is detectable if the physician is reasonably alert.

3. The "spell-binding" patient. Patients with pseudologica fantastica or with Munchhausen's syndrome or who are skilled "con" men or women, can be persuasive to a degree which is quite unusual in comparison with ordinary clinical encounters. When the physician has the feeling that the patient possesses extraordinary persuasive and dramatic powers, suspicion that a manipulator may be present is justified. On occasion the physician may have to respond to the genuine biological or psychiatric problems of a "Munchhausen" patient, i.e., a patient who feigns illness in order to obtain intoxicating drugs. Here it is important, both clinically and legally, to consult other medical professionals and to obtain legal advice, if this is feasible.

4. Coercion. A variety of coercive psychological techniques may be practised, ranging from frank threats of physical violence or financial harm, bribery or more subtle forms of coercion, such as arousing guilt feelings in the physician with arguments such as "doctors gave me drugs for my

pain and I became addicted, now why can't you help me out of the problem that doctors have caused?" Physicians who have been victimized in this way usually report that they were aware of what was happening but gave way "to avoid trouble".

A common form of extortion is the simple statement that "I have to have drugs to cope". Sometimes there is an implied or even overt threat of suicide. Obviously, adding drug dependence or drug abuse to a highly stressful situation is not the way to resolve it. Physicians, equally obviously, should not give way to these forms of extortion. If suicide is a possibility, psychiatric referral is indicated or the patient may need to be committed for observation. A full discussion of the management of such situations is outside the scope of this chapter, but the point here is that it makes no sense to add drug abuse to a long list of other problems and that the basic strategy is to delay prescribing and to observe the patient.

The foregoing discussion does not exhaust the varied approaches adopted by those who seek to manipulate physicians, but should serve to increase awareness of the problem. A good way of responding to ambiguous clinical situations is to give just enough medication for one night or one day while the physician insists on obtaining records or family interviews as well as making additional medical and psychiatric examinations to determine whether there is a real need for therapy. The manipulative patient will usually shun real assessment, resist attempts to verify history, and be unwilling to accept small amounts of drugs or extended periods of observation. A genuine patient will rarely object to such an approach.

Conclusions

Some misprescribing may be traced back to the novelty of certain drugs; physicians are sometimes inundated with samples of drugs said to be the "latest and greatest". Obviously at some juncture a physician has to try out new drugs. Good prescribing practices rest on predictability, however, and predictability is enhanced by experience. A good general principle, therefore, is for the physician to use relatively few drugs from any one class and thus to acquire experience which can provide the basis for the critical evaluation both of success and failure and of new drugs. It is impossible to be familiar with all the barbiturates, all the antidepressants, and all the benzodiazepines, but experience can be acquired with a few from each class. Such a principle is important to sound prescribing.

The conclusions described above are derived from clinical experience. Prescribing practices and the compliance of patients are being studied formally and, in the future, such studies should advance the art of prescribing considerably (Apsler & Rothman, 1984).

Reference

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5. Alternatives to psychoactive drugs

The need for alternatives

Having followed the discussion of the previous chapters, the reader should now have a much clearer understanding of the problems associated with the use of psychoactive drugs and of how they should be prescribed. Physicians are, however, confronted by another, apparently more difficult problem—what to do about those patients and their symptoms for whom psychoactive drugs are now recognized as inappropriate. What are the alternatives?

Before any practical alternatives are suggested, it would perhaps be useful at this stage to mention the five principal symptoms for which psychoactive drugs are commonly prescribed, namely: inability to cope, depression, anxiety, sleeplessness and pain. These have a number of features in common. They are all symptoms which everyone has experienced at one time or another, and the point at which they are regarded as being sufficiently severe to warrant medical intervention and treatment is somewhat arbitrary and varies greatly from one country to another. Then, all these symptoms are concomitants of other symptoms and many arise as a consequence of them. For example, people can feel anxious because they have a lump, or be unable to sleep because they are in pain; it is often very difficult to disentangle any one symptom from the much wider range of symptoms that the patient may be experiencing concurrently. In addition, all five symptoms may be due to a wide range of underlying conditions; in other words, they are completely nonspecific. Moreover, each one is capable of arising just as easily in a nonmedical context, as in a medical one. Finally, they are all normal and reasonable responses to common situations and, even when they are indisputably severe, they may still be reasonable responses to a particularly difficult situation (Ghodse & Khan, 1982; Murray et al., 1981).

The use of psychoactive substances to treat these symptoms may be potentially harmful in several ways. There may be a failure to investigate, diagnose and treat the underlying problems, whether medical, personal or societal, that have given rise to the symptoms. Psychoactive substances may also be harmful in the sense that they are potent drugs with a variety of side-effects; they may be misused and abused, taken in overdose and induce dependence. However, it is perhaps both more serious and more sinister

that they can alter in significant ways the personal characteristics of those affected, making them, for example, even less capable of meeting the demands of everyday life and of making their full contribution to work, the family, etc. It has been shown, for example, that the learning process may be adversely affected by certain drugs, making it even more difficult for patients who need new skills to cope with the cause of their symptoms to learn them. There is also evidence that information learned while under the effects of a drug is not necessarily carried over to the nondrugged state.

All this, however, is of no assistance to the health worker faced by a patient experiencing distressing and painful symptoms. With a galaxy of psychoactive substances available that can offer immediate relief, it is contrary to all medical training and practice to say to the patient "Yes, I believe that you are suffering badly and I sympathize, but the drugs which I could prescribe and which would make you feel much better, at least in the short term, are now considered dangerous for society as a whole (and perhaps for you in the long term), and therefore I am afraid you will have to continue to suffer."

There is therefore a need for practical, effective alternatives, but they must be alternatives that doctors (or others) have both the time and the resources to implement and, most importantly, that they believe in.

Management of behaviour

The main objective of this chapter is to provide a sample of the non-physical approaches that can be used to alleviate those symptoms usually treated with psychoactive substances. It is difficult to emphasize sufficiently the importance of managing patient behaviour at every stage of the patient–health-worker relationship, including encouraging life-style changes for illness prevention, ensuring compliance with diagnostic examination and treatment regimes, and coping with the anticipation and emotional after-effects of medical stress. These behavioural management tasks are routinely carried out by physicians and medical personnel, but for most health workers they do not involve a conscious application of a scientific technology, perhaps because the crowded medical school curriculum does not include courses in experimental psychology or its applications. Nevertheless, behaviour-management techniques are generally employed in a common-sense manner, but one that could no doubt be improved by appropriate training (Melamed & Siegel, 1980; Pinkerton et al., 1982).

Assessment of the patient

Interview is probably the oldest and most frequently used of the behavioural assessment procedures. As it usually takes place during the first meeting between patient and health care worker, the interview has a significant influence on the patient's expectations and on the outcome of subsequent interventions. The interview may vary from being highly structured, in which the topics discussed follow a prearranged format, to being flexible or unstructured, in which the interviewer follows cues given by the patient and does not restrict questioning to specific topics. Often both techniques are used, background information about age, previous

medical history, etc., being elicited in the structured interview, while flexible questioning elicits additional information.

Before any treatment strategies can be initiated, patient and therapist must discuss and agree on the behavioural changes to be effected and the approach to be used. Such discussions are repeated periodically so that treatment effectiveness can be assessed and new goals for behavioural change may emerge. One aspect of a behavioural assessment based on a typical diagnostic interview is that not only are problem behaviours targeted but behavioural strengths are also identified; this is important, since they are useful in the treatment approach.

Apart from its value in assessment, the interview may be therapeutic in its own right, because helping the patient to identify the underlying problem can be very useful, as can the relationship between patient and health care worker, initiated at the interview (Melamed & Siegel, 1980).

Other assessment procedures may also be used, including questionnaires, self-monitoring, behavioural observation and psychophysiological measurement. The importance of thorough assessment cannot be overemphasized, because behavioural intervention is not like using a cookery book—there cannot be a single recipe for every symptom. Rather, the process is tailored to the individual's unique problems in their particular context, and these problems must be clearly defined. The purpose of all the different assessment procedures, therefore, is to specify and select target behaviours, identify antecedent and consequent variables relating to the target behaviour, and collect data about the target behaviour and the variables affecting it.

Methods of intervention

If it could be assumed that the minds of men the world over were subject to identical influences and that their functional disturbances and behavioural manifestations were also similar, then psychological treatment or behavioural psychotherapy would be the same everywhere and based on a uniform theory of causation of behaviour problems and mental illness. But experience varies from culture to culture, between members of the same family and, at times, in the same individual. It is this complexity which defies a universally valid psychopathological theory, though some theories have come close to being generally applicable.

Psychological treatments, including counselling, various psychotherapies, group therapy and behaviour therapy, can be used, however, in most areas of behavioural and emotional problems, either on their own, or together with pharmacotherapy and other physical treatments.

In this chapter only those treatments which can be applied without the need for a lengthy period of training will be discussed.

Counselling and superficial psychotherapy

Counselling is usually concerned with educational, marital, sexual, vocational, personal and emotional difficulties. Clients may be advised as to the best course to take in order to solve their problems, or the treatment may be less directive, the interviews enabling clients to express their anxieties and

uncertainties and eventually to solve their own problems. Superficial psychotherapy covers a variety of approaches, some of which have a theoretical basis while others are purely *ad hoc*. Most are based on the health-worker–patient relationship, in which the health worker has a major therapeutic input. Such therapies may consist of persuasion, in an attempt to encourage the patient to divulge his symptoms, or supportive therapy, together with insight therapy during times of crisis. Some are based on a full description of the individual's life history, an attempt being made to correlate the symptoms with past events and environmental influences, while others are goal-directed (Sim, 1974).

Other forms of psychotherapy

What are generally known as psychotherapies are based on Western standards and cultures, and it is reasonable to suppose that they may not be relevant in other cultures. In the East, for example, where there is a tradition of Zen Buddhism and emphasis on meditation and bodily training to achieve enlightenment on the nature of the self, psychotherapy may be more effective if it is based on these principles and practices (Sim, 1974).

Behavioural therapies

Behavioural psychotherapy is a relatively new term for something which is as old as man himself. Wherever fear or anxiety have had to be overcome, or bad habits to be eliminated, re-education has been tried and desired behaviour rewarded or undesired behaviour punished. Behaviour may be thought of as the ways in which people react to their environment and what they do in it, and behavioural treatments are based on the application of learning theory developed by physiologists, neurologists and experimental psychologists. It is important at this point to mention that the basic principles of behavioural therapy as a method of modifying behaviour are not discussed here, only the treatment techniques associated with them.

Desensitization. One method of treating fear and anxiety caused by a specific object or situation is to present the patient with the feared object or an imaginary representation of the feared situation in a safe setting until these cues no longer elicit any emotional reaction. These behavioural changes can be effected essentially in two ways, namely, gradual and nongradual. The gradual approach (systematic desensitization) consists of moving through a hierarchy or sequence of steps towards the object or situation that elicits the maladaptive (undesirable) response. Alternatively, the patient may be confronted with the situation that elicits the maladaptive response without passing through a graded hierarchy of distress, a technique known as flooding.

In another technique, known as counter-conditioning, the first step is to determine which situations elicit the maladaptive physical or emotional reaction, and then to establish ways of eliciting a response incompatible with the maladaptive response, so that the latter is reduced and eliminated. A widely used technique for eliminating various maladaptive emotional

responses, such as anxiety, is relaxation, often used together with systematic desensitization. The latter involves three basic stages:

(1) The patient is trained in a response that will compete with anxiety, such as deep muscle relaxation.

(2) A hierarchy of situations is constructed by the patient, ranging from the least to the most anxiety-provoking.

(3) The patient is presented with items from the hierarchy, starting with the least anxiety-provoking, while in a completely relaxed state; only when there is complete extinction of anxiety is progress to the next level of the hierarchy permitted.

Aversive counter-conditioning is another form of therapy used to reduce undesirable, but self-rewarding reactions, such as drug dependence, overeating, etc. In this procedure, the unwanted positive reactions (e.g., taking drugs) are counter-conditioned by using a response to an unpleasant stimulus as the incompatible response. Because these methods are unpleasant and raise some ethical questions, they are usually restricted to behaviours that are resistant to other forms of treatment (Wolpe, 1958; Melamed & Siegel, 1980).

Operant techniques. Behaviours may be modified or maintained by the consequences that follow them. The most commonly used operant approach is the use of positive reinforcement, i.e., rewards. There are two basic types of positive reinforcers, the first being the primary or unconditioned reinforcers which occur naturally or are unlearned and biologically based on need (e.g., food, water). The majority of reinforcers for humans, however, are of the second type, namely secondary or conditioned reinforcers, such as money, and a variety of social reinforcers, such as praise, attention, etc. The technique is simple and should generally form a component of all behavioural treatment programmes, even when the emphasis is on other techniques. The identification of suitable reinforcers or rewards is obviously an important aspect of this treatment technique.

A second method of operant conditioning is negative reinforcement, i.e., punishment. In this procedure, an aversive or unpleasant event is terminated or postponed, depending on the performance of a particular act.

There are also a number of procedures that may enhance the effectiveness of reinforcement. Those most commonly used include shaping, prompting, modelling, assertiveness training, contingency contracting and biofeedback (Rachman, 1972; Sobell & Sobell, 1973).

Behavioural self-control. While most behavioural intervention programmes start with external, health-worker-managed procedures in order to make it easier to change behaviour, the long-range goal of treatment is for patients to learn to control their own behaviour themselves, without external aid. In other words, patients are taught to become their own therapists by helping them to learn self-control techniques that they can use to modify their problem behaviour. This is particularly useful for maladaptive behaviour that may not be readily accessible to the health worker, such as insomnia, excessive eating and sexual problems (Goldfried & Merbaum, 1973; Cobb, 1982; Mahoney & Thoresen, 1974).

A variety of self-control techniques are used either alone or in combination with other procedures in behavioural intervention programmes. Behavioural programming (consequences contingent on the problem behaviour—self-reinforcement and self-punishment) environmental planning (systematic rearrangement of environmental events associated with the problem behaviour prior to its occurrence), and self-monitoring (systematic observing or recording of one's behaviour) are a few examples of this type of treatment (Thoresen & Mahoney, 1974).

Cognitive strategies

This approach assumes that maladaptive behaviours can be mediated by factors such as unrealistic or irrational attitudes and beliefs and self-defeating thoughts. It follows, therefore, that in order to change maladaptive behaviour patterns or to help in recovery from illness, it is also necessary to modify any disordered or faulty thinking (Beck, 1976; Beck & Emery, 1979). Two well known types of cognitive therapy are cognitive restructuring, which tries to alter irrational beliefs and illogical thought processes and replace them by rational ones through discussion and rational self-examination, and self-instructional training, which attempts to replace maladaptive self-statements (self-directed verbal commands) with more flexible and adaptive, coping ones. The objective is for client and therapist to develop a common view of the problem and the treatment, and to develop patterns of thinking which are appropriate and sensible (Mahoney & Thoresen, 1974).

Advantages of alternative treatments

It can be seen that a wide range of behavioural and other psychological techniques can be used instead of psychoactive drugs. These techniques may sound difficult when described in scientific jargon. In reality, they are the application of common-sense principles that have been known for centuries, and it is therefore not surprising that they can be learned by a wide range of health care workers as well as by family members, teachers, etc. The use of precise, scientific descriptions and definitions, although perhaps discouraging to the lay-person, is probably justified if it encourages a more disciplined approach to behavioural techniques and enables their efficacy to be more rigorously assessed. In addition, it adds status to the treatment, making it more acceptable than if it were "mere" tradition.

The introduction of behavioural techniques offers real savings, by reducing both the amount of money spent on expensive psychoactive drugs and the demands made on doctors, if other health care workers are trained to provide treatment in this way. In developing countries, where there are many demands on scarce resources, buying psychoactive drugs usually entails the diversion of cash from other, more important, projects, such as immunization and the treatment of life-threatening diseases. In industrialized countries, however, although psychoactive drugs are prescribed and consumed in vast quantities, they only account for a small proportion of total health expenditure; if inflation is taken into account, the real cost of psychoactive drugs has decreased. Moreover it is often much quicker and

easier for the doctor to prescribe psychoactive drugs than to try and deal with the patient's underlying psychosocial problems. In this situation, the use of behavioural psychotherapy techniques by nonmedical personnel can relieve the doctor of many demands on his time (Murray et al., 1981).

Financial considerations should not, however, be the sole, or even the most important criterion, in the comparison of different treatments. The real criterion is what is best for the patient, not just in the short term, but in the long term also. It is on this score that the alternative treatments to psychoactive drugs are so markedly preferable. Behavioural approaches increase patients' awareness of the physical consequences of uncontrolled feelings, and make them more ready to accept both a psychosomatic origin for their symptoms and reassurance instead of a prescription. For example, in one general practice in London in which a counselling service was introduced, the average rate of surgery attendance in six months after completion of counselling, as compared with a similar period before referral, fell by 31%. There was also a fall of 30% in the average number of prescriptions for "psychotropic" drugs and one of 48% in prescriptions for "nonpsychotropics" (Murray et al., 1981).

It seems likely, therefore, that the behavioural alternatives to psychoactive medication may have valuable educational and preventative properties, since they help people to take responsibility for their problems, rather than relying on pharmacological solutions, and thus reverse the trend towards the medicalization of psychosocial problems. The setting up of self-help groups for those dependent on tranquillizers, and the greater awareness of the risks of psychoactive drugs, are indications of the change in attitude that is needed if the trend of the last 30 years is to be halted and then reversed. The importance of education, both for health care workers and consumers, is clear. Finally, it should be pointed out that the very title of this chapter — "Alternatives to drug prescribing" — epitomizes present attitudes to psychoactive drugs. It implies that the alternatives are the second choice, used only because of the disadvantages and drawbacks of psychoactive drugs. This is undoubtedly the wrong attitude and the arguments in favour of the "alternatives" are so overwhelming from the point of view of the health of the individual and of society as a whole, that in future it will be the psychoactive drugs that will be seen as the second choice, "alternatives", whose use must be explained and justified, just as with behavioural techniques today.

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6. The role of medical education

The first aim of the Moscow meeting on the training of health care professionals in the rational use of psychotropic drugs was to identify deficiencies in existing educational programmes for the rational use of psychoactive drugs and to examine various educational approaches which would be effective in modifying the excessive use of drugs.

This was in response to resolution EB69.R.9 adopted by the WHO Executive Board on 22 February 1982, which recommended "educational programmes for physicians and other health workers" as a means of "improving prescription, delivery and utilization practices regarding psychoactive drugs". The organizers of the meeting stipulated that "education" was to be understood in the broadest possible sense.

This chapter refers specifically to medical education, but the educational principles and methods discussed in it are applicable to the education of all health workers, not just physicians.

A responsible medical school or medical educational system will have means of ensuring that students graduate or obtain a licence to practise medicine only if they have acquired the necessary skills and abilities. This is the purpose of a final qualifying examination—to certify that a graduate is fit to practise and thereby to protect society.

Deficiencies in education leading to irrational prescribing

Iatrogenic behaviour (or "irrational" prescribing) may be the result of various educational deficiencies. Firstly, the practitioner may not have learned in medical school how to be a life-long learner, i.e., how to keep up-to-date with pharmacotherapeutic advances, or how to acquire or improve the competencies required for the "alternative" therapies described in Chapter 4. Many medical faculties assert that education for life-long learning is one of their aims, but relatively few provide the opportunities for the development of the necessary skills. Secondly, the system of continuing education may be inadequate, i.e., it may not base its activities on a rational process of systematically diagnosing educational needs and devising and providing educational means of meeting such needs, including the evaluation of its educational responses to practitioners' needs. Thirdly, a country's drug regulatory authority may not keep practitioners adequately informed either about new or commonly used drugs. Finally, the body

which regulates the education and behaviour of practitioners may not consider iatrogenic behaviour associated with the prescription of drugs sufficiently serious to act on it, or may not apply sufficiently rigorous standards of quality to curricula and examinations. All or one or more of these factors may apply.

The WHO Executive Board resolution previously mentioned implies that the fault is an exclusively or mainly educational one and recommends "educational programmes for physicians and other health workers". (It should be remembered that deficiencies in professional practice are rarely amenable to educational treatment only.) Since it appears that medical educators have been, and continue to be, at fault, and unaware of it, it would be simple-minded to believe that the same educators or institutions will introduce the educational programmes recommended by the WHO Executive Board—unless they radically change their outlook. The educational programmes most likely to correct the deficiencies in current educational programmes would be programmes of training in education for the curriculum planners, teachers and educational administrators responsible for the training of medical students in rational prescribing and in the "alternative" forms of medical care described in Chapter 5. Such training would not be different from that of medical teachers in the educational competencies needed for any of the other medical-care competencies in which students must demonstrate adequate levels of performance before they are licensed to practise. Similarly, its usefulness will depend on corresponding changes in the organization and management of the curriculum and its associated learning activities, particularly its assessment and evaluation.

Formal educational programmes, however, are not the only sources of information from which medical students and doctors learn about the use of psychoactive drugs and of behavioural alternatives to drug therapy. The education of a student or a practitioner comprises all the teaching and learning that produce a medical graduate and that enable a practitioner in any branch of medicine and health care to keep up to date or maintain the necessary skills. Methods and styles of learning are very personal, and learners at all stages tend to have their personal "educational programmes", which are often quite different from an institution's stated programme. Many formal educational programmes have large components that are not useful to students or practitioners and that even impede learning or confuse those who take part in them.

All curricula therefore consist of parts that are formal and to a large extent overt, and of other parts—often the more "lasting"—that are informal or "hidden", in the sense that they do not appear on any syllabus and are not tested in any examination. For instance, prescribing—the use of drugs in general—may well be influenced more by the practices and habits which students observe during clinical clerkships than by formal curricular courses in pharmacology or therapeutics. The enterprising and responsible student finds many sources of learning and the good curriculum planner provides the opportunities and conditions which stimulate and permit effective learning rather than trying to control curricular content by spoon-feeding students.

It is what students learn that matters, not what teachers, faculties or institutions say they teach, or what is shown in statements of curriculum content or syllabi. Consequently, the evaluation of educational pro-

grammes, or the search for educational deficiencies, must be concerned with what actually happens or does not happen, rather than with official programme statements, and with what students can do as a result of their experience in an educational setting, rather than what they can talk or write about.

What students learn best is how to pass examinations. The use that is made of examinations—of all forms of assessment and what they test or assess—determines what students learn. Much of what is learned for conventional examination purposes may be quickly forgotten if, in the form in which it was learned, it cannot be applied in clinical practice. Students will learn later in a clerkship or in practice, or relearn—from their supervisors or tutors or by observation—what the common or professed practice is. Much of what students learn in order to pass a typical formal examination in pharmacology in the preclinical part of a conventional medical curriculum is certain to be largely forgotten by the time that they graduate. Similarly, almost everything on which they were examined in the premedical or basic science examinations will be forgotten, unless it is learned in a practical problem-solving context, in which the student is an active participant, and is applied regularly in clinical problem-solving.

Evaluation of teaching and learning in medical education

In order to identify educational deficiencies, therefore, it will be necessary to observe and evaluate the actual, rather than the supposed, means and arrangements by which students learn. For example, with regard to the use and prescribing of psychoactive drugs, is practice uniform throughout the various departments – in the medical school, the teaching hospital, the primary care and community services – in which students learn? Or do students observe or practise under supervision different patterns of use of psychoactive drugs, with the result that they are confused at the end? What mechanisms exist in a medical school to ensure that medical students have consistent as well as acceptable – noniatrogenic – experiences throughout the entire curriculum and in all the places approved by the university for training purposes? How is the evaluation system controlled to ensure that consistent criteria are applied in the assessment of students' performance with regard to prescribing, throughout the curriculum and in the internship? What, if any, are the provisions for evaluating the medical curriculum, its planning and design, and its objectives? To what extent are those objectives in harmony with society's needs, the methods of learning and teaching, and the assessment methods? How, if at all, is the performance of teachers evaluated? Are examinations valid tests of knowledge, skill, attitude and performance? Is there an educational or curricular management group or curriculum committee, or other arrangement, for planning and monitoring the training of students in the "alternatives to drug prescribing" described in Chapter 5, and for ensuring that these "alternatives" rather than drug therapy become the first choice? What efforts have been made to establish such a mechanism? Do the teachers believe that telling the students what they should do and asking them in examinations what they would do is an acceptable form of education? What proportion of teachers have undergone any training in educational technology (i.e., the

application of the educational sciences to professional medical education)? Do students consistently and continuously learn to become effective and efficient self-learners? How is their competence as self-learners assessed? Are teachers and teaching programmes evaluated for their effectiveness in training students in this competence? For example, to what extent are students given the freedom or responsibility to be self-learners? Are students rewarded for practising self-learning—or does the evaluation system discourage students from showing enterprise and initiative?

Obviously, these and all similar questions that enter into the evaluation of a medical curriculum are applicable to all aspects of it, and not merely to those parts from which students acquire, or should acquire, the competencies needed for the rational use of psychoactive drugs. If there is evidence that students are allowed to graduate without the competencies needed to practise psychological medicine (in the context of primary care, for example), and thereby become iatrogenesists by inducing dependence on psychoactive drugs in patients who consult them for symptoms associated with life stress, this is a reflection on the faculty as a whole and on the university that confers the degree which certifies that its graduates are both competent and safe. The public has a right to be concerned if it discovers that its medical schools have no systematic means of ensuring that all its graduates have undergone the training needed to deal competently with the "five principal symptoms for which psychoactive drugs are commonly prescribed", namely inability to cope, depression, anxiety, sleeplessness and pain (see Chapter 4).

Interviews and other assessment procedures

The ability to conduct an interview, both as an assessment technique and as a therapeutic mechanism, is, or is said to be, a basic and essential part of a practitioner's competence. It would be logical, therefore, for training in interviewing and the testing of competence in that procedure to be central to the curriculum. Students would first be introduced to the simplest techniques, progressing over the years until, as candidates for graduation, they would be required to demonstrate the levels of the more complex interviewing skills, in both assessment and therapy, expected of a practitioner. An indirect indicator of the quality of a medical curriculum in this respect might be the proportion of new graduates who begin their interviews with patients with a pen poised over a prescription pad. A direct test or measure of curricular quality and adequacy should take into consideration the provisions made by the faculty for training each student in interviewing, the resources devoted to it, and the validity and reliability of the techniques used to assess students' performance in it. The ultimate test would be the level of student competence in interviewing, measured against predetermined valid criteria, in actual professional practice. If it is argued that graduating students cannot be expected to use the interview expertly for assessment and therapeutic purposes, it is up to medical faculties, in consultation with practitioners or health-service managers, for instance, to make clear what levels of competence – for both purposes – will be acceptable at graduation and how student performance in interviewing at these levels should be assessed. It is unlikely that the public would be satisfied if it knew that medical graduates were able to talk or write about adequate

interviewing, but that medical schools could not guarantee competence in interviewing in the conditions of practice outside the medical school.

The "other" assessment procedures mentioned in Chapter 5, namely "questionnaires, self-monitoring, behavioural observation and psychophysiological measurement" are presumably less valuable or important by definition than interviewing, since they are "other". In any case, what they mean in practice needs to be spelled out so that it will be clear what the student and the practitioner will be doing when carrying out these procedures *in the conditions of practice*, outside the untypical or unrealistic conditions of the teaching hospital or even, possibly, the teaching practice. It will be necessary also to determine what levels of competence will be required of the graduate, bearing in mind the conditions and constraints of the practice of medicine, and especially of primary health care.

"Behavioural intervention" depends on "thorough assessment" and appears to be the key to the avoidance of irrational prescribing of psychoactive drugs. It therefore follows that the "educational programmes for physicians" (and other health workers) stipulated by the WHO Executive Board must focus at all educational levels on training in "thorough assessment" and "behavioural intervention", as well as on "rational prescribing", wherever there is evidence that existing programmes are deficient in these respects.

Assessing the adequacy of educational programmes

Various means may be used to assess the adequacy of existing or planned educational programmes. All will entail an authoritative statement prepared by a representative body, e.g., of teachers, educational specialists, subject-matter experts, general and specialist practitioners, undergraduate and postgraduate students, and community representatives, setting out in detail the tasks which each of the three functions ("thorough assessment", "behavioural intervention", and "rational prescribing") entail, and the skills – and levels of skills – necessary for performing them in the circumstances in which students will be expected to practise. This statement should be sufficiently detailed to indicate the resources, facilities, etc., that the medical school, and perhaps the health authority, would need in order to ensure that students acquire the necessary levels of competence. For example, if practitioners are expected to perform these functions in the community, e.g., in health centres or dispensaries or outpatient departments, the medical school will need to provide similar conditions, in which students will be expected to acquire, by means of supervised practice, the requisite skills. The assessment of student performance for certification purposes should require students to demonstrate the requisite skills under actual or simulated practice conditions.

The criteria used in the assessment should be acceptable to practitioners recognized as competent in the performance of these functions, and not only to psychiatrists and behavioural scientists, for example.

Once the statement previously mentioned has been prepared and approved, existing or planned programmes should be examined in order to determine their acceptability or adequacy from that point of view. A programme, curriculum or curricular unit should be examined in terms of

the various characteristics of any educational activity. These include: (1) its objectives, how they have been derived and defined, and how they are used for learning purposes and for the design and management of courses and course units; (2) the methods used for attaining the objectives, including evaluation; (3) the resources and facilities available to enable all students to attain their learning objectives; (4) the arrangements for ensuring the educational competence of teachers, including university staff and associated teachers and supervisors in the various teaching areas, such as outpatient departments and community primary health care facilities; and (5) the arrangements for evaluating the programme and for revising its objectives in the light of the results of that evaluation.

This kind of analysis of the adequacy of training in "thorough assessment", "behavioural intervention", and "rational prescribing" should take into account all the aspects of a curriculum from which students learn the various components of these functions. It should also assess how they are coordinated and how consistency with regard to acceptable pharmacotherapeutic and behavioural practices is achieved. In particular, how are the competencies needed for these functions determined – are they "thought up" by someone in an academic department, for example, or determined by observing practitioners at work under realistic practice conditions?

Such an analysis of an educational programme presupposes that the curriculum is competency-based, problem-solving and student-focused. If it is mainly subject-oriented and teacher-centred, providing little opportunity for students to be active rather than mainly passive participants, and if the assessment system is not competency-based, then, by definition students cannot be expected to master the elements of "thorough assessment", "behavioural intervention" and "rational prescribing".

This method of analysing a programme may be applied at any level and modified as appropriate. When properly applied, it will indicate what needs to be done to prepare and implement the "educational programmes for physicians and other health workers" recommended by the WHO Executive Board for "improving prescription, delivery and utilization practices regarding psychoactive drugs"

Continuing education

Continuing education, together with other, noneducational, administrative measures, can be an effective means of promoting the rational use of psychoactive drugs and the skilful use of assessment and behavioural intervention. It must, however, be carried out systematically and the continuing education system must itself be a rational one, in educational terms. (For a more detailed consideration of continuing education, see Chapter 7).

It would be unwise, however, to expand continuing education in "thorough assessment" and "behavioural intervention" unless there is evidence that irrational prescribing is a serious problem and that it involves a significant proportion of both primary care and specialist practitioners. Equally, it would be futile without some means of ensuring that those responsible for irrational prescribing will benefit from such continuing education, thereby solving the problem or reducing it to insignificant

proportions. A reasonably specific "epidemiological" diagnosis of the problem of irrational prescribing is therefore necessary. This should cover: (1) its prevalence, and its distribution by district or practice, age group, medical-school catchment area, or continuing education service; (2) evidence that the fault is due to educational deficiencies; and (3) development of an educational approach tailored to the needs and characteristics of the practitioners concerned. If the continuing education system is not geared to such an educational diagnosis and "treatment", the effort is unlikely to be successful. In addition, the practitioners concerned must be both able and motivated to use "behavioural intervention" and "thorough assessment" with sufficient skill and under the constraints of practice. A continuing education service must be able to deal with lack of motivation, unless it is amenable only to increased remuneration, to change in practice organization acceptable to the practitioners concerned, or to some other administrative action.

Improved performance in assessment and behavioural intervention is likely to be attainable only rarely by means of educational treatment alone. A continuing education service must be able to indicate what other action is likely to lead to the use both of nonpharmaceutical forms of treatment and of rational pharmacotherapy.

Conclusions

The application of the educational principles and methods discussed above will indicate the "various educational approaches, effective in modifying the excessive use of these drugs", which was one of the aims of the Moscow meeting on the education of professionals in the use of psychoactive drugs. The principal educational approaches are the following:

(1) The training of medical-school teachers and administrators in acceptable methods of curriculum planning and design, management of educational programmes, and student learning. Such training will be futile, however, unless it is applied.

(2) The training of students in methods of independent learning.

(3) A consistent approach to the education of students in the competencies (i.e., the clusters of skills, knowledge, attitudes) needed for "thorough assessment", "behavioural intervention" and "rational prescribing" under actual practice conditions.

(4) The training of organizers of continuing education systems or programmes (in problem-solving and competency-based learning under practice conditions), with special reference to the determination of educational needs and the design and management of educational activities to meet these needs.

(5) The education of the public in the rational use of drugs as part of health education with the aim of promoting and supporting community and family responsibility for healthy living.

(6) The training of health care administrators in methods of monitoring the use of psychoactive drugs both in hospital and community practice.

7. The role of continuing education

The education of health professionals at the undergraduate level tends, in the majority of countries, to follow the traditional Western pattern of university or college teaching coupled with practical training and experience in institutions. The extent and content of such training varies from country to country, and many institutions have been able to break with this tradition by increasing the proportion of community-based learning. Nevertheless, the graduate is not usually well equipped to work in the real world, where he or she is unprotected by the institution, cannot consult more experienced colleagues so easily, and lacks technological support (Edmondson, 1986a).

In fact, because of the rapid rate of growth of medical knowledge, the health professional at graduation has little more than a licence to learn. What is important, therefore, is that he or she should have acquired the critical skills to be able to learn effectively, and be given the opportunities to increase his or her knowledge and experience.

Continued opportunities for training are necessary not only because the student cannot, before graduation, be expected to acquire all the skills which he will need, but also because medicine will continue to advance throughout his or her career. There are few areas in medicine in which advances have been more rapid than in drug therapy, and particularly the therapy of psychiatric illness.

For those who specialize, the institution and its senior staff provide the experience and the knowledge. It is in the broader task of the primary health care physician or health worker that the traditional university or institution cannot provide appropriate learning opportunities in the long term. This is not to say that the institution cannot have a continuing role, but that it needs to identify that role. However, the very nature of its organization and services means that it will not, in itself, be adequate or appropriate. Moreover, for a majority of health professionals, working far from universities and teaching hospitals, the opportunities for continuing contact are very limited.

It is in such circumstances that the influence of governments and other organizations, professional, technical and community, must be used to the greatest advantage.

Several studies have indicated the need to help physicians and health workers to learn the proper use of psychoactive agents. In a recent WHO study in one country it was found that community health workers, lacking

regular opportunities for increasing their knowledge, and with only the limited information that they had been able to acquire, had been using certain drugs unwisely and to the potential hazard of patients[1].

Research has also shown that, even in highly developed countries, physicians have a limited understanding of the source of their knowledge about drugs, and that they overestimate the influence of reliable scientific publications and underestimate that of advertising (Avorn et al., 1982). Physicians have also been shown to be unable to assess the validity of the published literature.

As far as the provision of continuing education is concerned, there are a number of possibilities. Thus, in providing health services for its people, a government is responsible for ensuring that the best possible facilities and advice are provided, consistent with the resources available and its other priorities. As part of this responsibility, it must ensure that health workers are trained and kept up to date in the most effective use of potent drugs, including psychoactive agents. This is necessary both from the point of view of the well-being of the patient and to avoid waste of resources. Fundamentally, then, the government's actions are for the benefit of the people, and it can enforce compliance by regulatory means.

Over many years, a variety of new professional and other organizations have been established for those with various professional or expert skills. Some of these organizations represent different categories of health workers or specialist groups and are concerned with maintaining professional standards. Others are concerned with a particular illness or disability, e.g., mental health, diabetes, multiple sclerosis or cystic fibrosis. These are primarily self-help groups, providing their membership with services and information, but some have also assumed responsibility for keeping the less highly specialized professionals informed of medical advances. Many also sponsor research.

Consumer organizations, in contrast, are more community-based in character and seek to ensure that consumer goods are both safe and efficacious. They have been very active in promoting greater care in the prescribing and use of psychoactive drugs. Consequently, pressure can be brought to bear upon health professionals from two sides, namely by governments, through the controls that they introduce, and by the community, through the organizations just mentioned. Both are important, and examples are given here of cooperation between the two that have had beneficial outcomes.

A third group which should not be overlooked is the pharmaceutical industry. While bad marketing practices aimed at selling drugs rather than encouraging proper use are not unknown, the industry can provide training resources of immense value, and is increasingly being drawn into a consultative situation.

The various possibilities outlined above are considered in greater detail on pages 59–67.

[1] *"Rational" drug abuse policy of Thailand.* Unpublished WHO document, MNH 82.8. To obtain a copy write to: Division of Mental Health, World Health Organization, 1211 Geneva, Switzerland.

Governments

Governments have two basic aims in the control of psychoactive agents:

(1) To ensure a supply of safe and effective drugs to meet the real needs of the population;

(2) To control the health professions, supervise their use of drugs, and take steps to ensure that their knowledge is kept up to date.

The first of these is usually attained by means of regulation. Permission to market a drug in a country is granted only after a careful examination of the available evidence, both from industry and other scientific sources, on its safety and efficacy, and decisions are not made lightly. Many governments of developing countries are guided by the regulatory actions of others with greater resources. However, the health needs of different population groups may not be the same, and a constant interaction between government authorities, academic institutions, the health professions and the community is necessary. Several national drug control authorities ensure this interaction by the regular interchange of staff with both institutions and industry, or by part-time appointments of authority staff to university positions and vice versa.

Control of drugs

Before a drug is marketed, a great deal of information on it is accumulated, and this should be available for training purposes. Many governments already provide summaries of such information in annual publications or regular newsletters to doctors, pharmacists and others. Some more advanced countries are able to provide on-line computer reference facilities to hospitals, which are regularly up-dated, since the information on a given drug will change as experience in its use increases. Government authorities need to be aware of these changes, and the controls applied must be sensitive to new experience, and may require alteration as a consequence.

Because of the special health needs of a population, some important drugs may be released before all questions of possible hazard have been settled. Thus they may be released, subject to certain restrictions (Edmondson, 1983), for:

(1) Investigational use according to an agreed protocol;

(2) Use in approved hospitals or by specialists;

(3) Use by particular patients with certain diseases;

(4) Use by special authority or by means of prescriptions that have to be accounted for by the prescriber.

An example of the last of these is a system introduced in the Federal Republic of Germany in 1979, which applies to all drugs scheduled under the International Conventions. Each doctor receives, on request, a limited number of prescription forms which must be used when these drugs are prescribed. They have to be accounted for and, in addition to the serial number on each prescription, another number identifies the prescriber and the date of issue of the form by the Health Ministry. Maximum quantities of

the drugs concerned which may be prescribed by the doctor are laid down in regulations and the period of validity of the prescription is specified. Prescribing of these drugs has declined by one-third since the system was instituted without any apparent change in the quality of patient care. Thus this attempt to control the prescribing of dangerous drugs seems to have been very successful.

A number of other countries, including Brazil, Iceland, New Zealand, the USSR, and, in the USA, the State of California, have introduced similar systems and have had similar success in controlling prescribing. Unfortunately, in other countries, the medical profession seems to be strongly opposed to it. Further efforts to help the profession to understand the value of such a system and the benefits achieved in the countries which have adopted it are therefore needed.

A variety of other initiatives are used by governments that may be of direct or indirect value in training. These may include:

(1) The proper labelling of pharmaceuticals;

(2) Control of advertising;

(3) Provision of patient information;

(4) Utilization audit;

(5) Reporting systems for adverse drug reactions.

These are discussed in detail in recent WHO publications (Rexed et al., 1984; Rootman & Hughes, 1980) and by Edmondson (1986b). An example is given below, since it shows the value of cooperation between the government and professional bodies.

In many of the countries which participate in the international collection of information on adverse reactions to drugs under the auspices of WHO, the drug control administration acts as a collecting agency, but in others where resources cannot be allocated to this service, the task can readily be undertaken by a medical or pharmaceutical association. Thus, in the Federal Republic of Germany, such information is collected by the German Medical Association. An important part of the system is the distribution of regular summaries of important findings to health professionals. In addition, advantage is taken of the opportunity for the contributing doctor or pharmacist to learn from his or her participation. Where possible, information relating to reports received is communicated to the sender. This reinforces the physician's own commitment and encourages further participation. An advisory service is also available. This example of participation and feedback adds a self-learning dimension which is lacking in the majority of training schemes.

The value of the collection of information on adverse reactions in relation to psychoactive drugs is shown by the advice given to the international community by the German Medical Association in 1973, that the drug tilidine was capable of producing addiction; this eventually led to its being placed under international control. In the United Kingdom (Wells, 1970), a medical practice was able to demonstrate a substantial reduction in the prescribing of amphetamines and barbiturates following intensive efforts to inform both doctors and patients, and this led to a very

successful national campaign by the British Medical Association to reduce the use of barbiturates.

Such programmes should not involve physicians alone. Adverse drug reaction systems and other systems of post-marketing surveillance need input from pharmacists (Adverse Drug Reactions Advisory Committee, 1982), nurses and other community health personnel. Studies have been reported (Pinedo-Ocamp, 1982) showing how pharmacists' knowledge and attitudes have led to changes in training courses and information systems.

Control of the health professions

Some of the training-related initiatives already mentioned involve cooperation between the health professions and governments. There is, however, an area of statutory responsibility for professionals which enables governments to influence training standards and initiatives. Thus medical councils and similar bodies were originally responsible only for registration and discipline. However, in many countries, such as the United Kingdom, they have had a growing influence on standards and curricula in universities. The influence of the United Kingdom General Medical Council, in addition, has not been limited to that country but has also extended to the Commonwealth countries. It has also assisted in post-graduate specialist training by its consideration of post-graduate qualifications for registration.

Medical councils tend to be composed of health professionals, legislators and community representatives and can thus bring a varied experience to bear on training. In some countries, e.g., the USA, there has been a move to make a minimum level of attendance at post-graduate courses a requirement for continued registration, particularly in the specialities. Such bodies, since they work closely with the bureaucracy, can influence the development of government initiatives and information systems which can assist continuing training programmes.

A type of statutory body which is becoming more widely accepted in the health field is the community health council. Such a body has existed in the United Kingdom since 1974, and in recent years has been set up in two Australian States. In both countries, the task has been to bring together professional health workers, voluntary organizations representing various groups, and community representatives, to voice concerns and complaints and make proposals to the district health authorities. While the major role of such bodies has been the allocation of health services within the district, it must be recognized that the concerns voiced will also have an effect on manpower development and consequently on both undergraduate training and continuing education. Increased participation in such councils by active health workers, and particularly by community practitioners will increase the long-term benefit to services. Such local management of health services is not confined to developed countries, but is making an increasingly important contribution in developing countries such as China and Thailand.

Nongovernmental organizations

WHO has, since 1948, encouraged close relationships with nongovernmental organizations, recognizing the potential value of an exchange of

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views with groups of professionals and members of the community possessing expertise and understanding in special areas of interest. People, as well as governments, have a vital interest in the work of the United Nations.

Each nongovernmental organization represents a specific concern and seeks to achieve innovation in professional and community services as well as to influence policy in many areas of health. Cooperation with national authorities and international organizations is an important part of this process.

Some of these organizations have a particular interest in the proper prescribing of psychoactive drugs and in dealing with the consequences of drug misuse and addiction. These include associations for mental health and for child welfare, psychiatric associations and others. Other organizations are largely professional-based, while yet others are mixed or have a greater input from the community. These organizations are mainly composed of people concerned with particular diseases and disabilities. While they are primarily self-help groups, supporting their members with services and information, they have also developed a role in policy planning and in disseminating information.

An organization which is particularly concerned with the prescribing and use of psychoactive drugs is the International Council on Alcohol and Addiction, with its supporting national bodies. Two of its current projects are of special interest, and are described below.

1. *The Nigerian training project in drug dependence*

The aim of this project is to provide a wide selection of health personnel with:

(*a*) A basic knowledge of psychoactive drugs;

(*b*) In-depth, specialized knowledge related to particular health occupations;

(*c*) Specialized skills in the treatment and rehabilitation of persons with drug-related problems.

The impact of the project as it progresses is being evaluated, and a core of well trained local personnel is being developed, who, in the course of a few years, will be able to continue it on their own.

Training courses have been conducted for nurses, social workers, pharmacists, prison officers, medical practitioners and psychiatrists. Participants from outside Nigeria are now being included so that the courses may, with appropriate modification, be introduced into neighbouring countries.

2. *The Indian pharmacy training course*

This is principally designed to introduce Indian pharmacists to the principles of drug control at the national and international level; it includes discussion of the specific problems of the country and instruction in the monitoring of trends and collection of information for policy formulation. Participants are asked to define the role of the pharmacist in monitoring

drug use and preventing misuse. Some neighbouring countries are also being involved in the course.

Nongovernmental organizations are most numerous and active in the industrialized countries, where drug problems appear to be most serious, but it is reasonable to suppose that the developing countries will in the future be a major target for the suppliers of illicit drugs. Such organizations are capable of promoting and strengthening local, culturally specific initiatives, to prepare consumers of drugs in developing countries to resist intense marketing and promotion, and to foster an understanding of the proper use of drugs by professional workers and by the community itself.

Consumers' organizations

Consumers' organizations were set up initially to protect consumers from exploitation by commercial interests. They began by examining and testing goods and publishing the results, and also encouraged the adoption of public policies aimed at curbing commercial abuses. Later came a concern with services, including those provided by professionals, such as lawyers and dentists, and publicly run bodies, such as the post office and the health service. In all these cases, a consumers' organization works at three levels: (1) It helps its individual members by giving them clear information which can help them in choosing what to buy and in using services; (2) It puts the consumers' point of view clearly, and if necessary strongly, to the suppliers of goods or services; (3) It tries to promote changes in public policy and legislation that are in the interest of consumers. The essential purpose of consumers' organizations is to inform the consumer, but they have, directly or indirectly, had some influence on the information provided in professional education.

Of the most important bodies, those usually known as consumers' associations are concerned with the whole range of consumer issues, among which health constitutes only a minor part. A second group consists of patients' associations, a good example being the United Kingdom Royal College of General Practitioners' Patient Liaison Group; this is made up of lay persons, whose task is to make the professions aware of matters of concern to patients and to influence the development of policy in such areas as prescribing. Such liaison bodies provide real opportunities for increasing understanding and for learning about problems from a different perspective. Self-help groups are often active in dealing with particular consumer problems affecting their members.

Recently, some local groups have been formed to tackle the specific problem of dependence on such drugs as benzodiazepine tranquillizers. Members support each other in trying to do without the drugs and in influencing the use of medicines so as to avoid the development of dependence. Such groups may be a valuable aid to community practitioners and provide another avenue for increasing understanding.

To assist the training of doctors in the problems of drugs used in medicine, the United Kingdom Consumers' Association has, since 1962, published the *Drug and therapeutics bulletin*. This frequently contains articles on psychoactive drugs and related issues and is distributed to all prescribing doctors in England and Wales. Regular readership surveys suggest that it is both used and valued.

In 1980, the International Organization of Consumers' Unions sponsored work on the minimum information that prescribers need about medicines (Herxheimer & Lionel, 1978) and about the information needs of patients (Herman et al., 1978). This work is still going on. Direct health education of the consumer has also been undertaken.

One early major project on psychotropic drugs was the 1972 report *Licit and illicit drugs*, published by the Consumers' Union of the USA (Brecher, 1972). In 1979, the Mexican consumers' organization produced a guide to medical services and medicines which included substantial sections on psychoactive drugs. In 1982, the Public Citizen Health Research Group in Washington, DC, published *Stopping Valium and Ativan, Centrax, Dalmane, Librium, Paxipam, Restoril, Serax, Tranxene, Xanax: a full account of the dangers of these tranquillizers*, which became a best seller in the USA and Canada.

In 1984, the BBC television consumer series "That's Life" showed two programmes about the dangers of benzodiazepines and dependence on them, made with the help of MIND, the national association for education and research on mental illness in the United Kingdom. A leaflet prepared to accompany and follow up the programmes was requested by 35 000 viewers, 4000 of whom were professionals and counselling agencies. This very clearly demonstrates that lay persons involved in consumer activities can have an influence on the training of professionals. In fact, any interested and inquiring patient can make a physician aware of his need to learn.

In mid-1984, the Consumers' Association published a book listing 800 ineffective, or inappropriately or extravagantly prescribed drugs, among them many tranquillizers, with an analysis of the reasons why such products continue to exist and be used (Medawar, 1984).

Consumers' organizations are voluntary and supported only by their members' contributions. The resources available for training activities, such as those mentioned above, are therefore limited; nevertheless, professional groups can find their involvement in the planning and review of services a considerable help in directing training activities.

The pharmaceutical industry

The pharmaceutical industry contributes to many of the initiatives previously described. In particular, because drug companies develop new drugs, they are the major source of information on the safety, efficacy and undesirable effects, including the dependence potential, of those drugs. In order to comply with the requirements of the world's drug control authorities, this information must be both detailed and reliable. The continued licensing of a drug often means that the industry has to participate in post-marketing surveillance programmes, in which it needs to involve professional medical and pharmaceutical bodies or individuals.

The information obtained in this way may be of great importance in instructing prescribers in the safer use of psychoactive drugs. Both sides, in fact, can learn from collaborating with one another; for example, as the result of a recent series of studies carried out by public and voluntary treatment agencies on the use of a new narcotic drug, buprenorphine, the manufacturer concluded that it was not an appropriate drug for addict maintenance programmes (Australian Department of Health, 1986).

The WHO Collaborative Study on Strategies for Extending Mental Health Care has suggested that mental disorders constitute a significant proportion of the morbidity seen in primary health care facilities in developing countries, but that primary health workers are often poorly prepared to diagnose or treat these disorders (Edgell, 1983; Harding et al., 1978). Developing countries have serious problems in following the marketing and utilization of psychoactive drugs in their territory. They need more reliable information on patterns of illness and of the utilization of drugs in order to discover their real needs. Industry can take steps to make such information available to health workers, particularly those involved in training, so that better knowledge can help in preventing drug misuse.

The pharmaceutical industry has an important role both in making accurate information available and in assisting professional groups and health authorities in carrying out training programmes. The Code of Pharmaceutical Marketing Practices, which was introduced by the International Federation of Pharmaceutical Manufacturers' Associations in 1981, is a first step in ensuring that promotional information is accurate, ethical and based on scientific evidence. However, since information about drugs is constantly being increased as experience of actual use of the drugs concerned accumulates, industry needs the assistance of both the professional bodies and of health authorities in monitoring the continuing validity of this information and in keeping it up to date.

Collaboration between these groups can promote the mutual learning process and help to overcome the criticism that information provided by industry is biased because of commercial pressures. An important example of the value of such collaboration is the campaign conducted in the United States during 1981, when the American Medical Association took the lead in establishing the Steering Committee on Prescription Drug Abuse. This includes other national and state organizations of health care providers, the Pharmaceutical Manufacturers' Association, pharmacists' associations, the Food and Drug Administration, the Drug Enforcement Agency, treatment agencies and other concerned groups. The basic goals were: (1) to determine the nature and extent of the prescription drug abuse problem in each state; (2) to identify physicians who prescribe inappropriately and for profit; (3) to prevent forgeries, thefts and other unlawful use of prescriptions and drugs; (4) to develop cooperation with other groups in order to teach physicians about the use of controlled drugs; (5) to inform patients and the public on appropriate drug use and the hazards of abuse; and (6) to provide advice to practising physicians on the treatment of drug abuse and dependence.

Data on controlled drug use have been collected in ten states and the system has been shown to be an effective tool in identifying and controlling the diversion of psychoactive drugs to illicit use. It has also assisted in the more effective use of state resources. In some countries similar systems are operated by the health administration; however, even in such circumstances, the cooperation of industry and professional groups is essential.

Reference has been made to undesirable promotional practices. It must be recognized that not all pharmaceutical manufacturers are members of national or international associations and may therefore not be obliged to comply with the Code of Pharmaceutical Marketing Practices previously mentioned. In addition, some manufacturers may have difficulty in con-

trolling the activities of agencies in other countries, thus making it even more important for professional and voluntary organizations, including consumers' organizations, in those countries, to be vigilant and to publicize violations of the ethical standards, particularly where drugs having dependence potential are involved.

International organizations

While all the groups which have been mentioned are able to make contributions to training and to exert an influence in the countries or regions in which they are operating, the experience of other countries will still further increase the pool of available knowledge.

Several international organizations are active both in collecting and collating information and materials suitable for health personnel teaching programmes, and in providing advice based on their wide experience. If it is accepted that the training of health professionals includes increasing the knowledge of those working in all fields of practice, including government, then the activities carried out by the international organizations are potentially very influential. WHO, in particular, has taken a leading role for many years in all matters concerned with drugs, as was acknowledged at the International Conference on the Rational Use of Drugs (WHO, 1987) held in Nairobi in November 1985. It was agreed at that Conference that WHO should be responsible, *inter alia*, for:

(1) Promoting national drug policies;

(2) Improving information collection, analysis and dissemination;

(3) Promoting rational prescribing;

(4) Making learning materials available so as to improve the training of health workers in the rational use of drugs.

The Organization's activities in relation to the overuse of psychoactive drugs are influenced by its responsibilities under the International Drug Conventions, under which it has a scientific advisory role to the United Nations Commission on Narcotics, a topic discussed in detail in a recent publication (Rexed et al., 1984). Reference has already been made to some of WHO's activities. In addition, it has held many educational seminars, involving academics, government officers and practising health professionals, in South America, the Western Pacific, Africa, the Caribbean and Asia. Reports on these seminars are available from the Division of Mental Health, WHO, Geneva.

WHO also assists Member States in formulating national drug policies and promotes the concept of a model list of drugs. Since the first of these appeared in 1977, other lists of varying complexity have been drawn up to meet the needs of village health centres, clinics and hospitals, and are being used as a guide by many developing countries. The most recent of these lists was published in 1988 (WHO, 1988). The basic list contains about 30 psychoactive drugs which have been well tried out in practice and for which the information necessary to ensure proper use is available.

Reference has already been made to WHO's responsibility under the International Conventions, namely the Single Convention on Narcotic

Drugs, 1971 (amended by the 1972 Protocol), and the Convention on Psychotropic Substances, 1971. These set out the agreed controls on a wide range of narcotics, hallucinogens, sedatives, anorexics and stimulants, and other drugs having psychoactive effects and the potential to cause dependence. WHO's principal role is to assess the benefit–risk ratio of such drugs, based on evidence from many sources, and to suggest whether international controls are required and, if so, at what level.

These activities have led to a variety of publications including reports of Expert Committees (WHO 1977, WHO 1978) and of specialist working groups in public health (WHO 1981), and works dealing with mental health (Edwards & Arif, 1980), pharmacology[1, 2, 3] and therapeutic usefulness[4]. While there are no WHO publications relating specifically to education in the field of drugs, there are some general publications on the education of health professionals (WHO, 1979, 1980).

These activities bring WHO into close relationship with the United Nations Commission on Narcotic Drugs and Division of Narcotic Drugs, and the International Narcotics Control Board, which also have certain responsibilities under the above-mentioned Conventions. In addition to control as such, which is discussed in detail elsewhere (Rexed et al., 1984), these bodies are involved in educational activities aimed at reducing the demand for, and inappropriate use of, psychoactive drugs. They are also responsible under the Conventions for promoting the treatment, rehabilitation and social reintegration of drug abusers. A regular publication, the *Bulletin on narcotics*, and other special publications (UN Division of Narcotic Drugs, 1979, 1980), contain information which can broaden the outlook and add to the experience of those with responsibilities for drugs. The Division of Narcotics also provides valuable technical training in its laboratories.

A specialized agency of the United Nations in the field of education, the United Nations Educational, Scientific and Cultural Organization, is a source of general educational methodological expertise, and has also carried out cultural studies of relevance to drug abuse and examined the place of education in its prevention. The International Labour Office has collaborated with many countries in organizing rehabilitation and vocational training for drug- and alcohol-dependent persons, adding another important dimension to the understanding of the rational use of psychoactive drugs.

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[1] *Guidelines for the clinical investigation of anxiolytic drugs*. Unpublished document. Copenhagen, WHO Regional Office for Europe, 1983 (WHO European Drug Guideline Series No. 1).

[2] *Guidelines for the clinical investigation of hypnotic drugs*. Unpublished document. Copenhagen, WHO Regional Office for Europe, 1983 (WHO European Drug Guideline Series No. 2).

[3] *Guidelines for the clinical investigation of antidepressant drugs*. Unpublished document. Copenhagen, WHO Regional Office for Europe, 1984 (WHO European Drug Guideline Series No. 3).

[4] *Assessment of therapeutic usefulness of psychotropic substances*. Unpublished WHO document MNH PAD 84.15, 1984. Single copies may be obtained from Division of Mental Health, World Health Organization, 1211 Geneva 27, Switzerland.

Conclusions

The need to continue learning throughout professional life, as the pool of knowledge and experience grows, requires special efforts on the part of those concerned, so that advantage can be taken of all the available sources of assistance. Governments' consumers' organizations, the drug industry and nongovernmental organizations of many kinds can serve as major sources of information and learning skills, which are particularly valuable for health workers remote from educational centres. Their skills and experience both aid and supplement the decisions which must be made by government agencies. The specialized agencies of the United Nations are likewise a valuable source of expert advice.

In developing countries, where the resources available to the administration are limited, many tasks can readily be performed by professional bodies, voluntary associations and the other bodies which have been mentioned. The cooperation of health professionals is then more likely to be obtained, and there is also an opportunity for the feedback of advice and educational information at a professional, rather than an administrative, level.

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8. Sources of information

In simple terms the purpose of this chapter is to discuss the sources of information that may be helpful in training health care professionals in the appropriate use of psychoactive drugs. This includes the basic pharmacological data about the drugs themselves, the knowledge acquired during the use of the drug in practice, and numerical data which help in interpreting these facts or putting them in context.

The agencies that may participate in collecting relevant information include the national drug control authority, government health agencies and other government departments, academic and research institutions, special interest groups and voluntary organizations within the community, and the pharmaceutical industry.

The national drug control authority has a clear responsibility to collect information although, in many countries, other groups may do so on its behalf and may also participate in decision-making. Information collected, for example, during the registration process, may be derived both from research conducted and experience gained in academic institutions, and from the pharmaceutical industry.

Other bodies in the health field that collect data or whose systems may be a source of useful data include treatment and rehabilitation authorities and community health organizations, the latter having a special responsibility for preventive programmes and health education.

Other relevant government departments that can provide data are the law-enforcement agencies (police and customs) and their supporting scientific services, the Ministries of Transport and Education, and government statistical agencies, which are important as a source of basic morbidity and mortality data. Ideally, government agencies will collaborate in planning data collection so that the various factors involved may be more easily correlated. For example, where certain population groups exist, whether defined by geographical or other criteria, it may be possible to correlate drug utilization, morbidity, hospital admissions, or traffic accidents, for example, in a more meaningful manner.

The registration process

The registration of a drug is an important administrative act (Inman, 1979). It shows that information has been presented and evaluated concerning the quality, safety and efficacy of a drug and that this evidence has been accepted as satisfactory by the drug control authority. The drug can then be

marketed and dispensed to individuals. The information necessary for this purpose is substantial, consisting of data obtained from basic research and clinical studies conducted by research institutes and industry, and may represent many years of work.

The evaluation process is made up of the three stages described below; psychoactive effects possibly indicating a potential for dependence may be uncovered in any of them.

(1) *Chemical studies.* The fact that a drug has a chemical structure similar to that of one known to have dependence potential may indicate that its effects will also be similar. It is not proof of that, however, and can serve only to indicate to those undertaking the study that the question ought to be examined. Changing the structure of an existing drug may both enhance a beneficial effect or eliminate or reduce a harmful one.

(2) *Animal studies.* These studies are routinely carried out on new drugs and a body of information on physiological and pharmacological effects, long- and short-term toxicity, and safety is built up, although the resulting data are not necessarily directly applicable to man. Where it seems possible that a drug may have significant psychoactive effects, the laboratory concerned may seek information on the potential for inducing behaviour disorders or compulsive drug-seeking behaviour, and on possible withdrawal effects.

(3) *Clinical studies.* Where a psychoactive effect in man exists, studies may identify effects on muscle tone and movement, mental concentration, sleep habits, personality changes or other psychological effects. Real evidence, however, is likely to be obtained only in the later stages of the evaluation or even in use after marketing, when signs of habituation or symptoms of withdrawal are reported. It may then also be found that a drug has been diverted to the illicit market and is being used by polydrug addicts. New drugs considered to have addictive potential may also undergo direct experimental assessment in known addicts. This involves the study of such matters as suppression of withdrawal, identification by the addict as a "drug" in his terms, and successful substitution. Substantial doubts as to the ethics of certain experiments of this type exist and have not yet been resolved.

When the information described above is used in the training process, it must be remembered that the outcome of the research findings may not necessarily be the imposition of strict controls or restrictions on the drug concerned. A moderate level of control may be appropriate, together with the provision of advice to prescribers or arrangements for follow-up.

By the time that the registration process is completed, a very substantial body of knowledge about the drug concerned has been generated and should not be allowed to vanish into the archives. Some, of course, will be used in preparing packaging information, but this may not always be read carefully enough and must of necessity be limited in scope; it is usually intended to serve as an immediate source of information for the physician using the drug. The preparation of such packaging information is usually regarded as part of the registration procedure and requires skill and experience in order to ensure that the physician is well informed on

indications, dosage, possible reactions and interactions, toxicity, and so on. This is an area where international cooperation can be useful, and enable countries with fewer resources to take advantage of the work undertaken by the larger registration authorities. It will often be necessary to compare package insert information from various countries, since approved indications for the use of drugs may vary from country to country and it may be valuable to ask why this should be so. The material from a particular country may also include information on adverse or toxic reactions, contraindications, or, in contrast, on optimum dosage schedules, special advantages and useful indications, which have not yet been recognized elsewhere. The international exchange of knowledge and experience has a special place in the training process.

A number of countries have established national or regional centres which act as repositories for drug information drawn from various sources. The drug control authorities in the USSR use this information to prepare detailed summaries which are distributed to all doctors in order to assist them in the proper clinical use of a drug.

The Australian drug control authorities have used the summarized data to prepare individual drug protocols, bringing together all the information which might be valuable to the experimental pharmacologist, clinical trialist or practising physician. These are available from the National Drug Information Service, which has "on-line" computer links with major hospitals in each State. A doctor can obtain up-to-date information on request. This information is updated as additional data comes to hand after marketing, e.g., on adverse reactions or interactions, or new clinical trial evidence from the manufacturer. The use of such a system as a training resource is subject to certain limitations, since not all physicians will have access to it—indeed, they may well not appreciate its value. It is also quite expensive to operate and requires substantial professional servicing, although responsibility may be shared between collaborating international or regional centres.

In the United States, the National Institute of Mental Health and the National Institute on Drug Abuse provide material specifically related to the abuse of psychoactive drugs to health professionals. The available information is reviewed by experts in the area and guidance is also provided on the various forms of therapy for specific disorders. An important aspect of this particular service is that information on both pharmacotherapy and alternative therapies is included.

Updating information after drugs have been marketed

The updating of information is important, particularly in the light of past experience with psychoactive drugs (e.g., barbiturates and amphetamines) whose dependence potential long remained unrecognized. Drugs will undoubtedly enter the market before doubts about their dependence potential have been fully resolved, and appropriate action must be taken as and when new information becomes available.

In many countries the manufacturer has been expected to collect data, for example, on adverse reactions for a defined period after initial marketing. In others, systems for ensuring collaboration between the drug control authority and hospitals or research institutions, or with practising phys-

icians, have been devised. Any such system requires the active interest and cooperation of those involved if it is to be successful.

Voluntary monitoring systems

Many countries have, over the past 20 years, encouraged by the WHO Collaborating Centre for International Drug Monitoring, instituted their own voluntary reporting systems. Not all of these are administered by the national drug control authority; some have been organized by academic institutions and others by professional societies. The advantages of this arrangement is that it provides resources in addition to those of the government and also direct input into the training system, and it should therefore be given careful consideration.

Many adverse reactions to drugs will go unnoticed or will not be reported and it is therefore impossible to estimate their incidence. It may also not be possible with the limited data available to do more than suspect a possible association between a drug and a given effect, although in some circumstances, even when only a few reports have been received, cause and effect can be inferred. Even isolated reports contribute to the sum of clinical experience.

The most important use of this material is in training, since it provides a continuing commentary on the problems which are being seen as a result of drug use. Feedback of the information received to the practising physician is essential to promote interest and increase awareness of the need to report adverse reactions. An example is a warning letter sent by the Australian Drug Evaluation Committee to all doctors in October 1974 advising of mid-term abortion in women who had used the "Dalkon Shield" IUD. Before the end of the year, reports of 67 such events had been received, some associated with other IUDs, and clearly indicating that a problem existed.

While it is not usual to expect doctors to report drug addiction or drug abuse through this channel, it sometimes happens that they do. Thus "The 1983 adverse reaction reports from Australia illustrate this point (Australian Department of Health 1983). In that year there were 33 notifications of "drug abuse" and 4 of "drug dependence". These were: buprenorphine hydrochloride 20, chloral hydrate 2, diazepam 1, oxazepam 12, amitriptyline 1, pethidine 1.

There is no comparative relationship between these figures; they are simply reported events and there is a great deal of chance in what is and is not reported. The new analgesic drug, buprenorphine, is structurally related to morphine, and was introduced in Australia during late 1982. In early studies there had been little evidence to suggest a dependence-producing effect. However within a year of its being marketed in New Zealand it was reported that a small number of cases of dependence had been recognized and during 1983 the Adverse Drug Reaction Reporting Service in Australia received 20 reports of drug dependence in patients who had received the drug—all from the State of Western Australia. This grew in early 1984 to 64 and it was decided to examine the information more closely.

The Drug Dependence Board had collected records of drug addicts being treated and by matching those records of addicts reporting buprenor-

phine use with data collected from pharmacies by the Public Health Department, it was shown that there were more than one hundred persons abusing the drug—in a State with only 1.3 million inhabitants. Most of these were formerly treated for other addictions. A number had in fact dropped out of methadone programmes because they had found they could get a satisfactory alternative drug from the local doctor.

The figures provided by the manufacturer show that most of the sales were in that one State. However with the introduction of stronger controls in that State its use has fallen dramatically, with some suggestion of increasing use in other States. The question now for administrators is whether stronger controls over the drug should be more generally applied.

If a group of physicians had not been aware, and had not utilized the adverse reaction system for drawing a growing problem to attention, then action would not have been taken so quickly, although it was the detailed investigation that followed that provided firm evidence of a need for further action to be taken against its use by addicts as an alternative drug.

This example indicates that voluntary, spontaneous reporting can lead to more rigorous studies, which might, in another situation, lead to rejection of such reports from practitioners, since they cannot be substantiated.

Other studies of drug use

Because of the obvious limitations of spontaneous reporting, various schemes have been introduced to follow up the possible effect of drugs released for marketing. These are based on the preliminary conclusions of the evaluation process when a doubtful or suspect effect has been observed. For example, in an animal study, a withdrawal effect may have been noted occasionally, drug-seeking behaviour may have occurred with a psychoactive agent, or there may have been a suggestion of tolerance in a clinical trial. The proof, one way or another, must be sought during actual clinical use, and this may take a number of years.

The possible approaches are: (1) broadly based prospective studies under the control of the drug manufacturer, who knows where the drug is being used, (2) prospective studies in individual hospitals, specified data being collected according to an agreed trial protocol on a particular drug, (3) prospective or retrospective studies of physicians' practices, and (4) retrospective "recorded use" studies.

In the last of these, certain specified pharmacies record the personal identification of patients to whom a particular drug is dispensed. It is then possible at a later date to survey the patient population, either directly or preferably through their doctors. This is a useful method but there may be difficulties associated with privacy.

Studies of drug availability

General indicators of the use of psychoactive agents at national level can be gained by simple accounting methods. Information is available, for example, on imports and exports of drugs, drug movements through manufacturers, wholesalers, etc., purchases for hospitals and sales to retail

pharmacies. Many of these data are required by the International Conventions on narcotics and psychotropics, under which signatories must produce a variety of reports for use in international monitoring and decision-making (Rexed et al., 1984). The limitations of such broad data should, however, be remembered. Data on sales, for example, or even actual prescriptions, are not necessarily representative of drug intake by patients, and the linkage of prescribing with illness or with populations in particular areas is fraught with difficulties.

The example given below of how such gross utilization data can be used may be helpful.

A drug monitoring system in Australia collects and analyses information on all drugs included in the Single Convention and some additional drugs, which are regarded in Australia as requiring control of a similar level because of their addictive properties. It also includes some of the drugs scheduled under the Convention on Psychotropic Substances, 1971.

Data are forwarded to the central unit on all imports, exports or manufacture in Australia. Movements of drugs are recorded from the importer manufacturer through wholesalers to pharmacies, or to individual doctors who might order direct. In two States there is a local system which takes this a step further by monitoring the individual prescriptions as regards both the prescriber and the recipient.

Each State Health Authority receives reports at regular intervals on the distribution of these drugs within their jurisdiction. Such reports may be of a general nature with interstate comparisons, they may show comparisons between postal districts within a State, or the dispensed quantities from individual pharmacies, hospitals, etc. The analyses will also show up any discrepancies in the stocks and supplies at the various levels.

The consumption figures for methaqualone tables and capsules in five inner city suburbs of a State capital city during the years 1980 and 1981 are as follows:

Suburb	*1980*	*1981*
A	150 125	11 800
B	69 250	1 400
C	33 325	1 300
D	28 375	2 100
E	25 500	2 250
State Total	892 875	55 200

The suburbs concerned are adjoining inner city suburbs of similar geographical size, although their populations vary. These figures represent total sales at pharmacy outlets in each suburb although the patients are not necessarily residents of the suburb concerned. It is clear, however, that about 20% of the drug prescribed in the whole State was prescribed in one suburb of its capital city.

The importation of methaqualone was banned by the Federal drug authorities in June 1981 and considerable publicity was given both to the import decision and to the use of methaqualone by addicts. It was, however, still possible for the drug which was already in the country to be sold under State law. One might suggest that a drop in sales, both overall and in most suburbs, reflects the increased knowledge of its dangers.

Investigation by the State authorities of the pharmacies in the suburb with highest sales revealed that three doctors in this suburb were responsible for most of the prescriptions; one was said to have prescribed in a particular month about 15% of the total for the State, another about 10% and the third about 1%. At the time there would have been 10 000 medical practitioners registered in the State. There was understood to be a flourishing black market in methaqualone in this area and a medical disciplinary tribunal, headed by a judge, found the three guilty of professional misconduct, since the drugs were regarded by the tribunal as being supplied to patients on demand (Edmondson, 1985).

The law enforcement agencies

Law enforcement agencies are a source of information on such topics as the drugs appearing in illicit traffic, the volume of a particular drug being seized, the demand for particular drugs, and convictions for possession, dealing and smuggling. However, the information from law enforcement files, like any other, is biased towards its primary use. It demonstrates one aspect of a problem which must be seen in the total context.

As an illustration, law enforcement officers have in recent years expressed concern about the growing amounts of cocaine being seized. The data collected by the International Narcotics Control Board shows as much as a 10-fold increase in the amounts seized by police and customs in some countries over only a few years. These data can be contrasted with very recent information from a major drug-dependence unit in a large city, where the director made the following comments in relation to its work in that city:

> "Most of the heroin and illicit drug users pass through this unit. Over the past 2 – 3 years we have had approximately 300 'hard drug' users seeking treatment. Not one has come with cocaine as the principal drug .... While cocaine use is admitted to by the occasional heroin user it has rarely been the major drug used ... During the past two years the unit has had about 25 urine specimens each week examined for contamination by street drugs. Cocaine has rarely been detected ... It is my impression that cocaine is a minor and insignificant problem".

Similar examples to the above can be given relating to other drugs, and the difficulties of reconciling law enforcement data with those of the health authorities are apparent.

A most important point is that, until a drug is legally designated as addictive, it will not be of special interest to the police and will not appear in statistics, nor will those found in possession of it be prosecuted, since such possession is not illegal. However, criminal activities, such as theft, may indicate unusual demand.

The forensic laboratory is a source of information of a different kind. Examination of body fluids from corpses referred to the laboratory by the coroner, from accident victims or from persons charged with certain crimes, notably driving under the influence of drink or drugs, may reveal evidence of drug use. However, the interpretation of the test results is not straightforward. When drugs are well known, the results of quantitative analyses of

body fluids can be associated with various levels of psychopharmacological action, physical impairment or toxicity.

While it is important to monitor trends in drugs known to be abused, it is also important to gain an understanding of the effects of newer drugs. This is an area of research in which cooperation between the pharmaceutical industry, academic research institutions, drug registration authorities and government forensic laboratories is urgently necessary.

Other sources

Records and data collected in general hospitals, mental hospitals and treatment centres can be used to identify "drug dependence" or "drug abuse" and provide evidence of trends in the use of particular drugs. They may not, however, always indicate abuse itself but only a result of that abuse. Cirrhosis of the liver or Wernicke's encephalopathy commonly indicate alcohol abuse, and psychotic behaviour may be associated with amphetamine and cannabis use. Hospital records may also be able to identify secondary but serious public health risks associated with drugs, such as hepatitis (Idanpann-Heikkila & Khan, 1981; WHO, 1981). It is important, therefore, that unusual or unexpected events associated with psychoactive drugs should be recorded so that, in the long term, their abuse potential, and the dangers of such abuse, can be properly assessed.

Drug abuse often manifests itself as acute intoxication, the patient sometimes presenting to the emergency services as a case of self-poisoning. Such intoxication may not, of course, be associated with dependence, but the possibility must not be overlooked. Coma and respiratory depression are the common manifestations of the acute toxic effects of psychoactive drugs but there may also be psychiatric manifestations, such as toxic psychoses, hallucinations, paranoid delusions, etc. There are also minor degrees of intoxication in which self-control may be lost to some extent so that injury results; this is quite apart from the major injuries associated with traffic accidents. Emergency services must therefore be trained to probe for information on drug use; this may be useful both in patient management and in relation to the broader issues of drug control.

Another serious effect of the proliferation of drug abuse has been the withdrawal syndrome in neonates—a life threatening syndrome which needs to be recognized rapidly. More recently, awareness has increased of the dangers to children of the forced administration of drugs by addicted or disturbed parents; information on such administration is likely to come to the notice of the social service or child welfare agencies concerned with cases of child abuse. The various agencies concerned therefore need to cooperate in collecting information to complete the picture of a family social problem due to drug abuse.

These and other examples demonstrate that, to collect data on drug abuse, an awareness of all the possible sources of such data is necessary. Indicators can do no more than indicate, but their examination may make it possible to define a hypothesis, which can then be tested.

The main purpose of gathering the information described in this chapter is to identify trends in the use and abuse of psychoactive drugs. Details about specific individuals are therefore not required; nevertheless,

the right to privacy must always be remembered and respected and the highest ethical standards of confidentiality must be observed in all studies.

Conclusions

It is important to ensure that all agencies having a potential interest in drug abuse are involved in the collection of relevant information and data. This will help to:

(1) Ensure that information, once collected, is available for training purposes and as a reference source;

(2) Promote collaboration between agencies, particularly the health, law enforcement and community agencies, and to clarify the significance of the data collected and their interrelations;

(3) Promote awareness in health and community groups of the "indicators" of new problems and trends in drug abuse;

(4) Promote the collection and use of information whilst preserving individual privacy; and

(5) Increase the practical use of the information collected.

There is no point in collecting any information simply for its own sake.

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9. Information dissemination

As emphasized in previous chapters, the misuse of psychoactive drugs is a large and steadily increasing problem in many areas of the world. The prevention, or at least limitation, of drug-related harm is becoming a high priority even in countries which, until recently, had relatively low levels of psychoactive drug use and misuse. In order to adopt a rational and effective approach to drug problems, it is essential that all those concerned with this subject should have access to accurate and up-to-date information. "Drug education" is frequently identified as an indispensible and potentially powerful weapon in the armoury of drug misuse prevention. In this chapter, some of the possible methods of disseminating information about drug use and misuse are considered, with particular reference to health care professionals.

What can information and education achieve?

In view of the many reasons for drug-related harm, a realistic appraisal is required of what may be achieved by disseminating information. It is commonplace for discussions about drug misuse to conclude that "the answer", or at least an important potential solution, is education. This view is based on the assumption that, if people are given "the facts" about drugs, they will then behave in a more rational and safer manner in relation to them. This is sometimes, but not always, true. Education by itself is not a panacea. It is unreasonable to expect the dissemination of information by itself to counteract all the influences causing people to use or misuse drugs. Many drug-related problems arise for purely irrational reasons and sometimes involve people, such as pharmacists, doctors or nurses, who know a great deal about the effects and potential dangers of the substances they are taking. It is important not to expect too much of education. On the other hand, there are obvious advantages in ensuring that health care workers and others who are involved with drug prescribing and drug problems should be as well informed as possible. Only if such information is widely disseminated will people be adequately equipped to avoid or to respond to drug problems. For example, if an attractively marketed new drug has adverse side-effects, this should be made known as widely as possible so that safer alternatives can be adopted. If overprescribing is leading to dependence or to a "grey market", in which drugs are passed on to other users, information may be an effective first step in the control or elimination of an avoidable problem.

The dissemination of information *may* influence knowledge, attitudes or behaviour. Available evidence suggests that behavioural change is the hardest of these three goals to attain.

A recent review has raised a number of thought-provoking and important theoretical and practical issues with regard to health education (Rose, 1985). Thus it was pointed out that a strategy directed towards "sick" or "high-risk" individuals may be irrelevant as far as the general population is concerned. This is the so-called *preventive paradox*. Rose elaborated this paradox as follows:

> "This has been the history of public health—of immunization, the wearing of seat-belts and now the attempt to change various life-style characteristics. Of enormous potential importance to the population as a whole, these measures offer very little—particularly in the short-term—to each individual; and thus there is a poor motivation of the subject. We should not be surprised that health education tends to be relatively ineffective for individuals and in the short-term. Mostly people act for substantial and immediate rewards, and the medical motivation for health education is inherently weak. Their health next year is not likely to be much better if they accept our advice or if they reject it. Much more powerful as motivators for health education are the social rewards of enhanced self-esteem and social approval."

This should not be interpreted as implying that drug education is useless. On the contrary, it is eminently worthwhile, but needs to be regarded as only one approach to the control of psychoactive drug use. In the past, "education" has frequently been confused with propaganda or even with advertising. In relation to drugs, these are still frequently confused. This is not surprising in view of the many powerful vested interests involved, including the drug producers, politicians, health care workers and drug users. Drug education needs to be devised and implemented with five key questions in mind:

(1) To which specific problems does it relate?

(2) At which people is it directed?

(3) What are its precise objectives?

(4) Which methods are the most appropriate to achieve these objectives?

(5) To what extent are these objectives achieved?

Targets of drug education

Information about psychoactive drugs may be directed at several quite distinct groups of people, as briefly discussed below.

The general population

Strangely enough, the general population is sometimes overlooked. Drug prescribing patterns are not determined solely by the pharmaceutical industry and by health care professionals; the community as a whole is, in fact, one of the most powerful influences on prescribing. Social attitudes to

the merits of drugs or of alternatives to drugs (such as counselling) are of great importance. If it is a commonplace social expectation that health care professionals *will* inevitably prescribe drugs, it may be difficult for them to refrain from doing so. Conversely, social attitudes may be influenced by information about the limitations and potential dangers of drugs. It appears that public opinion in the USA, Canada and Europe has become more critical about the prescribing of drugs. Recreational drug use is also influenced by community attitudes. It must be noted here that, whenever an activity is unusual, illegal or "deviant", as some types of drug use are, the minority who indulge in such practices may reject messages emanating from "conventional", "establishment" sources, such as health departments or researchers. Sometimes such "anti-drug" campaigns may even be counterproductive.

The drug manufacturers

Drug manufacturers should, ideally, be a major source, if not *the* major source, of technical information about their products. A huge amount of such information is indeed produced and disseminated by the pharmaceutical industry. Even so, once a drug is in use, the industry needs to be kept informed of problems which may not become apparent when a drug is being tested or before it has been in use for some time. In the past, several extremely promising drugs, e.g., heroin, barbiturates, amphetamines and benzodiazepines, have all been found to give rise to problems which were not evident when they were first introduced.

Health care professionals

The most obvious target groups for drug information are those whose responsibility it is to prescribe psychoactive drugs and who provide health care to people with drug-related problems. These include doctors, nurses, social workers, clinical psychologists, counsellors and many other professionals or voluntary workers, most of whom will have extremely limited access to specialist drug training or to authoritative drug information. It must be remembered that only a small minority of health care professionals have either the opportunity or inclination to read specialist or technical journals or books. Very often the only literature widely available to such workers is in the form of drug advertising. This should, of course, be dependable and truthful. It is designed, however, to stress the benefits of the product and ultimately to increase its sales. Such information needs to be balanced by "objective" and independently produced material. As well as being appropriate recipients of drug information, those in the health care professions are also a rich source of such information. They are in a unique position to discuss and to highlight issues relating to the prescribing, benefits and limitations of psychoactive drugs. As such, they are a source of information which needs to be exploited to the full.

Policy makers

Drug companies are often extremely powerful and very persuasive. Like any other group of manufacturers, they need to be subject to certain

controls in order to protectthe consumers of their products. This does not mean that the drug industry is "bad". On the contrary, it is a source of great benefit to the human race. In spite of this, however, many drugs may be misused or are potentially dangerous. Stringent rules are needed to minimize the risks and to ensure that tragedies, like that involving thalidomide, never occur agan. This type of control requires both strong political commitment andgood international cooperation. All countries should strive to enforce ne highest standards, so that a drug deemed "unsafe" in one country isnot allowed to slip in elsewhere. It has recently been reported, for examp, that multinational tobacco companies have responded to increased sles resistance to "high tar" cigarettes in industrialized countries by "dumping" them in developing countries in which consumers are less aware of the dangers (Taylor, 1984). Such behaviour can only be chcked either by educating and mobilizing the public or, more simply, bylegislative controls; the latter must be based on the fullest possible informaion, so that politicians, civil servants and other policy makers are importat and legitimate targets for drug information.

Patients

Those to whom drugs are prescribed very often have little idea either of the chemistry or potential sid-effects of the substance that they are taking. Doctors should thereforeexplain to patients as fully as possible the advantages and possible problems associated with any drug that is prescribed for them. This doe not mean a long lecture or a mass of technical details. Simple guidelines re sufficient—essentially a few basic "dos" and "don'ts" relating to safe duages and appropriate use. For example, people taking drugs such as barbitrates or benzodiazepines should be advised not to drive while under their ffects and should be warned about the additive effect of alcohol.

Patients should be gien the opportunity to discuss the drugs they receive. Equally importanthealth care workers should periodically take the time to ask patients wheth they are experiencing any adverse side-effects or are becoming drug-dependent. Ideally, additional corroborating evidence should also be soug from close relatives or friends of the patient, though this may often nobe feasible.

If possible simple, attractive leaflets and posters may be used to publicize basic guidelines, r example, the merits of *not* using drugs during pregnancy. This would beery expensive to do on the large scale. Printed information is, of course, nly useful for those able to read it.

Some drug misusers cne to the attention of health care workers as the result of accidents and overdoses. While some of them may be resistant to either information, advice offers of help, others will welcome it and may be encouraged to seek assince to overcome their drug-related problems. Even drug users who do nthemselves respond to advice and information may have close relatives friends who will. Such people are also the "victims" of drug misuse d may need all the information and support that can be provided.

Methods of disseminating information

In this chapter, some of the general issues related to the dissemination of information about psychoactive drugs has been reviewed. The aetiology of drug misuse, the varied nature of drug problems, the likely results of education and some of the appropriate "target groups" have been briefly discussed. It must again be emphasized that drug information should be disseminated as economically as possible. The five key questions (subject, target group, aims, methods and evaluation) should influence the strategy or strategies to be adopted. It is important to clarify precisely why information is being disseminated before embarking upon a venture which may be both time-consuming and expensive. In the past, far too many health education campaigns have been mounted with little sense of purpose and even less concern about how their effectiveness can be evaluated.

Information about psychoactive drugs may be imparted through a variety of media, including scientific journals, professional magazines, conferences, lectures and seminars, booklets, posters and leaflets, textbooks, audio and video cassettes, the mass media—newspapers, popular magazines, radio and television—drug industry bulletins, and mandatory reporting systems. A brief appraisal of these and other possible methods of disseminating information is all that is possible here.

Scientific journals

The most authoritative source of scientific information is contained in specialist journals, which present carefully marshalled and often independently refereed research findings and discussions for the judgement of fellow scientists or specialists. Journals vary a great deal, some being able to publish information about topical issues without much delay while others have a long waiting list of papers which may take two years or even longer to appear in print. The main limitation of journals is that they do not, by themselves, reach a wide audience but are invariably read only by a minority of health care professionals. Many important journal articles are never translated into languages other than those in which they are published and many are never picked up by the mass media and so remain relatively obscure. Journals are expensive and many are seldom read outside university libraries or major urban centres.

Popular science magazines

While the "serious scientific" journals are not widely read, some popular science magazines and newspapers reach a considerable audience and are excellent channels for disseminating topical drug information to those in the health and social services who may neither have access to nor the inclination to read scientific journals. The type of material presented in such publications differs from that contained in journals, and a less academic and more journalistic style is usually preferred. Most important drug issues can be discussed in lay language and journalists are invariably very interested in drug-related stories. The main limitations of such magazines is that their circulation is extremely restricted in developing countries.

Conferences, lectures and seminars

As noted above, scientific journals only reach a small audience and some do not present genuinely "new" information because of the delay between the writing of a paper and its publication. An invaluable means of disseminating drug information is provided by meetings of people interested in drug issues. Such meetings may take several forms, including formal lectures or teaching sessions, conferences, seminars and symposia. Face-to-face contact permits discussion and interaction; reading a journal or a magazine does not. The organization of meetings enables information to be presented and discussed in a flexible manner related to the needs of the participants, "experts" and "novices" alike. During such meetings, it is important that information should not simply be presented; it must also be criticized and discussed. This applies not only to conferences, but also to formal lectures to students or to other groups of people.

Meetings may be organized in an almost limitless variety of forms. Health care workers from a region or a country may meet together for a week to consider and discuss issues of mutual interest. International conferences enable researchers, clinicians and others to compare experiences. Village meetings may enable community populations to review local problems, such as prescribed drug use or public drunkenness. Meetings must be properly prepared and planned, have clear objectives, and cater for the needs of specific groups (e.g., nurses, parents).

Careful consideration should be given to the audience for whom a meeting is intended, e.g., a specialist group or the general public. Some conferences fail to satisfy their participants because they are poorly organized or because they cater for too heterogeneous an audience. Small meetings intended for specific groups are advisable, since they are logistically easy to arrange and provide more opportunity for the participants to be actively involved. The fundamental rule in the organization of meetings is that their contents and programmes should be *relevant* to those who will attend them. In addition, information should be presented as attractively, or as entertainingly as possible. All distinguished scientists and researchers are not necessarily also good communicators or "conference performers", and many people become bored by having to sit through lengthy lectures or a long series of presentations. Time should always be allowed for people to relax and to meet informally. Most conferences are memorable and valuable not so much for their formal content as for the opportunity to meet and talk to other people. This opportunity is of particular value for those who usually work in isolation from their peers.

Booklets, posters and leaflets

One of the cheapest and most efficient ways of disseminating information is by means of booklets, posters or leaflets. These include the prescribing advice leaflets accompanying new drugs and produced by the manufacturer, booklets for doctors and nurses, and posters displayed in the local health centre or on roadside hoardings. Such information is more likely to be read than lengthy or highly technical material. Many people in the health and social services do not have the time, money or motivation to read journals and magazines or to attend even short local lectures and conferences.

Attractive booklets or leaflets may be circulated relatively cheaply to large numbers of such people, and to others, such as the general public, or specific groups, such as youth leaders and pharmacists. Material of this type may fruitfully provide factual information about the effects of drugs, possible dangers and services to help those with drug problems.

As already noted, the printed word is meaningful only to those who can read. In countries or in areas where a high proportion of the population is illiterate, printed material and even simple posters, are of little use, and audio and video cassettes (see below) should be used instead. In addition, in countries in which several languages are spoken and, more important, read, separate versions of each booklet, leaflet or poster will be required for each language group.

The impact of such brief forms of communication is often very difficult to assess. Many health care professionals are perpetually deluged with technical information about drugs, much of it in the form of glossy and seductive advertising. Most of it goes unread and unheeded.

Textbooks

As already noted, much of the technical information about drugs and drug issues is contained in esoteric specialist journals to which the overwhelming majority of health care professionals have at best only limited access. Textbooks play an invaluable role in bringing together and summarizing a considerable amount of information not otherwise widely available because it remains in journals. Such books need to be revised and updated at regular intervals. They also need to be as cheap as possible if they are to be within the means of the many people who could benefit from their contents.

At present many textbooks are badly out of date, few are particularly cheap and few are related to the special needs of developing countries. Several books exist which offer an exhaustive source of reference information (e.g., Cox et al., 1983), while others relate specifically to alcohol, tobacco or to illicit drugs. Very few have been concerned with drug use and misuse in different cultural settings (e.g., Edwards et al., 1983), and fewer still with the problems caused by prescribed psychoactive drugs (e.g., Marks, 1978).

Textbooks will remain beyond the reach of many people for reasons of availability, language, literacy and price. Those who do have access to them may become better informed as a result. This does not, however, necessarily mean that their professional or personal conduct in relation to psychoactive drugs will be altered or "improved".

Audio and video cassettes

Drug information may be presented and disseminated very attractively through recordings on audio and video cassettes. Both can impart information even when the recipients are illiterate. Against this, video cassettes, in particular, are expensive and require both electricity and appropriate equipment before they can be shown. Audio cassettes are much cheaper and may be played on relatively cheap portable machines. Both audio and video cassettes have the advantage that they can be mass produced and widely

distributed. Many countries are too large for it to be possible for the limited number of "drug experts" or available specialist teachers to meet more than a handful of health care workers face to face. Audio and video recordings enable the new information generated in centres of scientific excellence, which are usually located in cities, to be widely circulated, even in rural areas. Such aids are useful *adjuncts* to face-to-face teaching and may serve to enhance or to stimulate discussions among health care professionals, students and other groups of people. They are seldom sufficient in themselves, since they cannot take the place of debate and discussion.

The mass media

By far the cheapest way of imparting information to large numbers of people is through the mass media. Drug issues are newsworthy and can often be given extensive coverage completely free of charge by radio, television, newspapers and magazines. Such coverage ranges from short items highlighting specific issues (e.g., drug use during pregnancy) to detailed reviews in lengthy articles or documentaries. Such publicity can be very persuasive and influential, but needs to be tempered with restraint. Very often media coverage of drug issues sensationalizes or trivializes them, usually with the aim of increasing circulation rather than deliberately to mislead, though it may do so accidentally. "Drugs" are potentially sensational subjects and arouse strong emotions. It is easy, therefore, for drug-related problems to be exaggerated and for the media to create unhelpful myths, stereotypes and scapegoats. Drug problems may become inflated into "moral panics" which do little to facilitate responsible debate and constructive responses. Nevertheless, health care workers and drug professionals should use the media. People, including journalists, have the right to be given accurate information. They also have a responsibility to use it with proper restraint. The media are important, not only in relation to the news that they present, but also in relation to the picture of drug use that they emphasize. The use of alcohol, tobacco, and both prescribed and illicit drugs, as portrayed in plays and films as well as in popular novels and magazines, helps to create, reinforce and condone drug use and thereby to influence social norms. Very little thought has been given to the impact of the media on drug use. As with drug advertising, the effects may not necessarily be immediately obvious but they exist nevertheless.

Drug industry bulletins

As already noted, a vast amount of invaluable information is made available by the pharmaceutical industry through the medium not only of leaflets and reviews, but also of its trained specialists, who are often prepared to travel and to discuss the advantages and problems of their companies' drugs. The industry is a useful ally in the dissemination of factual information.

Drug manufacturers may also give financial or logistic support to other ventures, such as conferences and the production of videos. The interests of drug manufacturers and health care professionals are often completely identical, but they may sometimes diverge, since manufacturers have a strong vested interest in selling their products and in maximizing their

profits. Accordingly, information produced by the industry should be carefully appraised and, if possible, supplemented by whatever "independent" evidence is available.

Mandatory reporting systems

Every country needs some form of ultimate "watchdog" over drug-related problems. The nightmare of the effects of thalidomide and increasing awareness of other iatrogenic drug problems serve as forceful reasons why good reporting systems of the adverse effects of drugs are so very important. Evidence of such adverse effects must be actively sought and rapidly passed on by some mechanism that is both readily accessible and familiar. The system should seek information not only from health care workers but also from those receiving drugs, whether on prescription or not. An excellent review of drug abuse reporting systems has already been published by WHO (Rootman & Hughes, 1980), though this is mainly concerned with illicit drugs. Reporting systems are useful only to the extent that they lead to action aimed at minimizing drug misuse. This is something that depends on both health workers and politicians.

Conclusions

"Education" is defined by the Concise Oxford Dictionary as "systematic instruction". In the field of drug use, this is probably an unattainable ideal for most people. Nevertheless, the dissemination of information is an essential strategy in the efforts to minimize drug-related harm associated not only with prescribed drugs but also with those that are used nonmedically. Information is invaluable, but needs to be disseminated carefully, purposefully and with due regard to what may realistically be achieved. Sometimes this is extremely limited, as in the case of campaigns aimed at deterring young people from misusing alcohol or illegal drugs.

If drug information is to be circulated as widely as possible, a variety of strategies must be used, some of which have been briefly discussed in this chapter. The main issue is whether or not such efforts produce tangible results. This is the subject of the next chapter.

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10. Assessing the effectiveness of interventions

The reasons why evaluation is necessary are worth stating, since it should be judged by its usefulness rather than by its methodological rigour. Since improvement presupposes change, it is the function of evaluation to provide objective assessments of what has changed, how much has changed, how the change has been achieved and what its (anticipated and unanticipated) effects have been. Other, more detailed, questions, such as how long the change has lasted and the cost of the effort required to sustain it, are included in these wider categories. In the longer term, of course, interventions are tested, not so much to provide retrospective judgements as to establish the basis for the planning of improved interventions in the future. Good evaluation therefore forms part of a continuing process of planning, delivery and re-evaluation.

Levels of evaluation

It is worth distinguishing between a number of different levels at which effectiveness can be tested. The simplest relates only to whether participants subjectively rate a particular experience as being of value to them. While it is clearly not sufficient, for most purposes, simply to ask people whether they enjoyed themselves, or whether they found a particular event useful, it is possible to gather impressions about the response of an audience to different aspects of the various components of an event. It can be argued that people are more likely to learn if they are favourably disposed towards what they are being taught, and that such a subjective assessment is therefore a relevant first step in evaluation. Similarly, peer review can contribute to this preliminary stage of evaluation.

That it is only a first step is, however, important to recognize. It fails to measure many of the important variables which might usefully contribute to subsequent programme improvement. Two linked, though distinct, concepts which are also relevant are efficiency and cost-effectiveness. The first can best be measured by means of process evaluation, where the roles of various participants are analysed and their interactions monitored in order to determine how well an attempt to generate improvements worked in terms of its operational functions.

Cost-effectiveness is a rather different concept. It involves greater attention to comparability, both with other similar programmes and also with some more or less arbitrary standard of what the outlay should be (in terms of funding, man-hours, or transfer of resources) in order to achieve a stated outcome. It relies, therefore, on process evaluation, as well as other more objective assessments of the inputs which have been made, but also requires a clear understanding of what the outcome is.

To achieve this, an analysis of impact is also necessary. Indeed, there are those who would argue that this is the only really important measure of the effectiveness of an intervention. Since, for example, the purpose of an education or training programme is to increase knowledge, change attitudes or behaviour, or improve skills, the only way to find out whether the programme was worth undertaking is to measure the extent of these changes and to compare them with any that have occurred naturally in a control group. This, however, like the other levels of evaluation described above, is not necessarily as simple as it sounds. Later in this chapter an attempt will be made to indicate how some aspects of effective planning can actively contribute to more useful evaluation.

In this, as so often happens, the comprehensiveness of the data is determined, at least in part, by the effort devoted to gathering them, which is in turn influenced by the priority given to evaluation, as reflected in programme budgets. Monitoring effectiveness as part of direct operational feed-back clearly makes fewer demands than evaluation as a specific component of a programme, and to which a known percentage of total programme funds is specifically allocated.

In the remainder of this chapter, issues are considered which are, as far as possible, relevant to each of the various levels. After a discussion of improved planning, some methodological questions relating to evaluation will be addressed. In order to give substance to the points being made, some examples will be drawn from training programmes in this and in another connected area (that of medical education on alcohol-related problems). Finally, there will be some discussion of how best to utilize the results of evaluation, so that real improvements can be made and old mistakes are not repeated in the future.

Planning for evaluation

Knowledge, attitudes and behaviour

Evaluation begins when an intervention is being planned, not after it has been completed. Various aspects of planning, if taken into account from the outset, make it more likely that useful and valid evaluative data will be generated. The first of these is the realization that learning is not necessarily logical.

Many programmes of education and training, both in health and in other sectors, are still based on the assumption that there is a direct cause-and-effect relationship between increasing knowledge, changing attitudes and imparting new skills. Whilst all three are relevant to the subject of this publication, the links between them are far from being as straightforward and logical as has sometimes been assumed. It is clear from many areas of

professional education that few difficulties are encountered in using training opportunities to increase knowledge. While information may not always be as efficiently transferred as might be desired, training rarely, if ever, leads to an actual reduction in knowledge, except where inaccurate information is being communicated.

In some cases, negative attitudes may constitute a barrier to learning, but it is not necessarily true that attitude change must precede behaviour change. Indeed, it is sometimes the case that the process of learning a new skill and the behaviour changes which accompany that process can pave the way for subsequent attitudinal changes. The work of Ajzen & Fishbein (1977) on attitude–behaviour relationships led them to conclude that "a person's attitude has a consistently strong relation with his or her behaviour when it is directed at the same target and when it involves the same action". Thus, in planning an intervention, if both the target and the action are defined, an evaluative design can be produced capable of providing specific but comparable data on changes in both attitudes and behaviour.

Aims and objectives

One issue that has a direct bearing on assessing whether or not any particular programme is likely to achieve its objectives is, of course, the extent to which those objectives have been specified in the first place. In this context, a strong case can be made for setting clear, but limited objectives. In part, this is because the achievement of a vaguely expressed or excessively general aim such as "promoting better prescribing practices", cannot by its nature be easily evaluated, since the aim itself leaves too many questions unanswered, e.g., "Better than what?" and "Better by what criteria?" In addition, it is likely that, where a clearer but more limited objective (such as, for example "to make physicians aware of the dependence potential of drug X and to encourage them to prescribe it only for limited periods") has been selected, greater care will be exercised in ensuring that the actual form of the programme as delivered is consistent with that objective.

Often, indeed, it is helpful to define one overall objective which can encompass a number of more specific ones. Thus, the attainment of each of the latter can be seen as contributing towards that of the overall objective, even if that might itself be more difficult to evaluate. Confusion over terminology can cause difficulty in this area, since some authors use the term "goal" to refer to the overall objective and "target" to refer to the more specific ones. What is more important than the terminology, however, is that the specific objectives should be consistent with the overall one, so that each provides a valid basis for measuring effectiveness.

Coupled with specificity comes the notion of pragmatism. If, indeed, an attempt is being made to encourage particular changes in behaviour, then it is not sufficient for the desired changes just to be clearly specified; the instructions on how to achieve the changes must also be explicit and accessible to the target audience. Knowledge, even relevant knowledge, does not carry with it the instructions on how it can be applied.

This point is one of the most important ones made in the review by Gatherer et al. (1979) of effectiveness in health education. The authors also stress that the characteristics of the target group towards whom the

programme is directed must be consistent with both its aims and the instructions on how to implement it. Thus there would be little point, other than to promote liberal education in its vaguest sense, in offering a programme on prescribing practices to those not licensed to prescribe drugs. This is of particular relevance when considering the needs of new and potentially indifferent target audiences, e.g., those well satisfied with their existing prescribing practices.

Attention and participation

Gaining the attention of the target audience is clearly necessary if they are to participate in the process of change. Broadly speaking, there are three distinct areas in which the appropriateness of the material for its intended target audience requires careful review during the planning stages. The first of these—the actual content of the material—has already been mentioned. It is worth emphasizing, however, that appropriateness of content goes beyond mere relevance. This is, of course, an essential requirement, since material perceived as irrelevant is unlikely to receive attention, but even relevant material can appear not worthy of much attention unless care has been taken to ensure that it is expressed in terms which are themselves acceptable to the target audience.

Then the expectations of the target audience regarding the information which they are receiving also call for review during the planning stage. Like everything else, training programmes exist within a variety of contexts; the subject of prescribing practices, for example, exists within the context of the individual's own prescribing behaviour, previous experience of medical education and other educational experiences unrelated to professional training.

Finally, the identity of the person responsible for delivering the programme is also worthy of attention. It should not be assumed, for example, that an expert in pharmacology is necessarily the best person to undertake this task. Extensive knowledge of the technical information is not in itself any guarantee of the ability to engage the attention of potentially resistant practitioners. Communication skills may be just as important.

Communication and reinforcement

In the planning process so far described in this chapter, a message has been carefully formulated that will achieve a specific aim by practical means and is designed for a specific target audience. Both the content of that message and the means of communication likely to maximize the attention paid to it have been considered. The question that remains, therefore, is how to increase the chances that, after the message has been received and understood, it will actually result in the desired change in behaviour. In general terms, this can be related to the extent to which the audience finds the message acceptable. To be acceptable, it must be concise, since it will then be clear; any ambiguities will be explicit rather than concealed and its chances of being retained in something like the desired form will be enhanced. The more diffuse the message, the more likely it is that it will

become entangled in other knowledge and value systems, which will vary from individual to individual.

Well designed programmes can increase motivation by stimulating the involvement of the audience in the process of change. The place of entertainment within education and training has tended to be minimized because of the important part played by the puritan ethic in the development of educational theory in the nineteenth century. Equally, however, it is shortsighted to assume that, just because information is transmitted, it is received, or that, once received, it is stored. Doctors, in particular, are subjected to a vast daily bombardment of information and advice. Very efficient screening mechanisms protect the individual from such an information overload. If an intervention is to penetrate those screens, more is required than merely a good aim. Nothing succeeds like reinforcement.

Repetition is one component of reinforcement; others relate to the extent to which what has been learned is seen to be useful and relevant to actual clinical practice. In part, this can be addressed through good planning, supplemented by the establishment of some mechanism for continuing contact after the intervention. What form such contact should take will vary considerably, depending on other factors, but it should at least provide an opportunity for an exchange of experience.

Methodological problems

Some methodological problems relating to the design and, more particularly, the implementation of evaluation cannot be solved by means of a set of simple guidelines, since different programmes have different objectives and involve quite different experiences. Nevertheless, these questions must be answered to the satisfaction of those responsible for the programme concerned.

The first relates to timing. Clearly, the programme should be preceded by a pre-test and should be followed by a post-test. While it is generally not difficult to arrange the former to coincide with the beginning of the programme, the latter poses some difficulties. If the post-test is administered immediately after the programme, it is then difficult to know whether any of the changes it reveals are likely to persist. If, on the other hand, too long a period of time is allowed to elapse, it may not be possible to regain contact with all those who participated. Equally, so many intervening variables may have emerged that it may not be possible to ascribe particular changes to the programme as such.

Many evaluators therefore recommend a pre-test immediately before the intervention, a post-test immediately afterwards, and a post-post-test at some convenient time (say, 6 months) after that. All of which presupposes, of course, a substantial commitment to evaluation, particularly if it is coupled with the process evaluation of efficiency and cost-effectiveness suggested earlier in this chapter.

A second major question is that of the optimum size and composition of the sample. While a total sample will no doubt be possible if, for example, a pilot course for ten general practitioners is being evaluated, an entirely different approach will be required for a national campaign designed to reach all those licensed to prescribe drugs in a country. It is likely, as is so often the case, that the size of the evaluation budget will determine what is

and is not possible. This is, however, a chicken and egg situation. If the budget is so small that the sample is not of adequate size and no valid conclusions can be drawn, then it is scarcely worth the effort to undertake the evaluation. In other words, the size and composition of the sample should be taken into account during the budgetary phase of the planning process.

The third question is that of control or comparison groups. Here it is worth remembering that the purpose of the exercise is to improve prescribing practices, not to give professional evaluators opportunities for writing papers for educational journals. In other words, while some standard of comparison is undoubtedly necessary, the strictest scientific standards may be inappropriate for an exercise of this nature. The purpose of the comparison group—to provide information on those who did not receive the intervention—can usually be met without matching every individual for age, sex and colour of eyes.

The final question is: Who is best qualified to undertake the evaluation? Here again, a balance must be sought between rigour and convenience. The results of the evaluation must be as objective as possible. Often, however, the cost of engaging professionals from another institution to undertake the evaluation will be disproportionate to the cost of the actual interventions. For many purposes, the calling in of a consultant from an outside body to work with those undertaking the programme, and attempting to evaluate it, may prove sufficient. If so, then some measure of the independence of that consultant will be an important aspect of the evaluation process itself.

Examples from alcohol education

Some of these themes can be illustrated by briefly reviewing ten studies of the related problem of alcohol education in the medical curriculum, since some important lessons can be learned from it. Of the ten studies reviewed, nine were undertaken in the United States of America and one in the United Kingdom. The nine American studies were all concerned with alcohol education in the undergraduate curriculum (during the first 3 years of medical school) or during the period of psychiatric residency. The one United Kingdom study looked at the response of general practitioners to a multidisciplinary training course.

The view that a wholly or largely cognitive approach to alcohol education in the medical curriculum is unlikely to achieve optimum impact is supported by the authors of these studies. Indeed, one study recommends a "bespoke" approach to this educational problem rather than the current "off-the-peg" style of curriculum development. "Concentrating on imparting information about alcoholism", suggested Fisher et al. (1976), "with the implicit assumption that greater knowledge will lead to better attitudes, may not be sufficient to alter attitudes favourably. Instead, the probability of attitudinal change might be enhanced by surveying attitudes prior to training and then designing the curriculum around the focal issues that require modification."

That factual information is currently being communicated or, at least, that doctors believe themselves to have sufficient knowledge to be able to

undertake treatment, is supported by the United Kingdom study (Cartwright et al., 1980), which found that doctors were less anxious than social workers and probation officers about the state of their clinical knowledge. Chodorkoff (1967) notes that: "A program designed to give clinical experience must teach an approach to the patient in addition to providing specific information on knowledge about clinical entities and theoretical issues."

The most encouraging aspect of this brief review is the extent to which medical education on alcohol dependence emerges as potentially able to produce a positive impact on its recipients. Analysis of the studies in this review suggests that programmes which adopt a strong attitudinal and clinical approach stand a very good chance of making a positive impact in those very areas. Since the potentially damaging effects of negative attitudes among doctors are so considerable and so likely to influence both the acceptance of further training and the likelihood of future clinical involvement with alcohol-dependent patients, this finding is of major importance. It suggests that medical education can confront therapeutic pessimism head on and have a substantial impact on widespread negative attitudes, thus opening the door to clinical training and subsequent clinical involvement.

The study by Fisher et al. (1975) of the impact of the normal undergraduate medical curriculum supports such a view. They conclude that: "The results of the present study suggest that attitudinal education would have optimal chance of success if it involved clinical training and taught proper attitudes in the same manner as informational matters are currently taught." While the actual wording of that conclusion does seem to beg a number of questions, particularly in relation to the methods of communication selected for different educational objectives, it does serve to underline the importance of keeping in mind an integrated model of the medical curriculum in which the threads of the cognitive and clinical approaches are woven together to form a single experience.

It is, inevitably, much more difficult to make unequivocal statements about the impact of education on behaviour (clinical skills). In those studies in which a positive behavioural impact was reported, diagnosis rates were used as the criterion of success. These have the advantage of being measurable and relatively objective. They say nothing, however, about what happens to the patients once they have been diagnosed and whether the specially trained doctors were better able to help them with their alcohol problems. Methodologically, there are enormous difficulties in taking evaluation beyond diagnosis into treatment. It may, however, be possible to go some way along that road if, instead of looking beyond the rainbow for treatment outcome rates, attempts are made to look at the treatment *process* and the extent to which reducing therapeutic pessimism may have helped to let fresh breezes blow through the windows of a few hospital clinics.

In that sense, an indirect measure of the effectiveness of education may be obtained by determining the number of doctors prescribing particular substances or even, in some circumstances, the total number of prescriptions. It should be borne in mind here, of course, that encouraging appropriate prescribing practices is not necessarily the same as advocating fewer prescriptions. The importance of accurate and comprehensive baseline data on relevant topics cannot be overemphasized.

Conclusions

The preceding examples from the area of medical education on alcohol-related problems are intended to illustrate some of the common issues which emerge in the evaluation of programmes in an area similar (though not, of course, identical) to that being discussed here. The final question that emerges is how the results of evaluation can best be used, given that they are likely to be equivocal, at least in some respects.

The first answer is that such results should be fed directly back into subsequent programme design. There is, however, another important aspect, namely the responsibility of planners and evaluators alike to the wider scientific community. While papers for learned journals are not an end in themselves, the publication of useful information derived from evaluation exercises will undoubtedly be of enormous value to colleagues in other countries wrestling with identical or similar problems. It is symptomatic that only ten studies on alcohol education were published over a 20-year period. The responsibility to communicate does not end with the intervention. This is equally true for the participants themselves, since they will certainly communicate something of what they have learned to their colleagues. Thus each intervention can be likened to throwing a pebble into a pond. The greatest impact is probably at the moment of delivery, but the effects persist and, although they grow fainter as they spread, they can eventually reach everybody.

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11. Recommendations

After a week of discussion and debate on all aspects of the prescribing of psychoactive substances, the participants in the Moscow meeting made the following recommendations which, it is hoped, will be incorporated into the policies of all institutions concerned with the education of health care professionals.

1. Training in rational prescribing, in particular of psychoactive drugs, should be intensified in the undergraduate education of health professionals.

2. Both undergraduate and postgraduate training of physicians should include basic training in the various alternative or adjunctive nonpharmacological treatments that can be used instead of prescribing psychoactive drugs.

3. The education of prescribers should be focused on health problems as much as on drugs.

4. Education programmes for health care professionals aimed at improving prescribing should be developed in all countries with the collaboration of the relevant professional organizations, other nongovernmental organizations and educational specialists.

5. Research to determine what prescribing practices are desirable should be encouraged. The most important problems in each individual country must be identified.

6. Information about appropriate drugs should be provided to patients in all countries, with the collaboration of professionals, consumers and industry.

7. Since patient experience is an important source of information, methods of using it for educational purposes should be developed.

8. Policy makers should make use of advanced communication techniques in attempts to improve prescribing practices; these include video, television and the advertising strategies used by the pharmaceutical industry to promote psychoactive substances, in addition to the techniques developed by educational specialists.

9. Governments of all countries, but especially of developing countries, should be advised of the importance of investment to upgrade the technical and administrative knowledge of drug regulatory agencies. Good registration procedures and appropriate control of psychoactive drugs are essential components of all action to eliminate drug misuse and abuse.

10. Developing countries in particular should be encouraged to implement an essential drugs programme, as recommended by WHO. As part of such a programme, the number of drugs available in a country should be reduced, since an unnecessarily large number of drugs is an obstacle to rational education.

11. The promotional material originating from pharmaceutical companies should help prescribers in making rational prescribing decisions by providing useful objective information. Nonscientific claims or other ways of drawing medical attention to drugs should not be allowed.

12. Wherever the trade name of a drug is used in labelling or in other printed material, the giving of equal prominence to the official or generic name should be encouraged.

13. A multiplicity of names for a drug confuses both health care professionals and patients, and hinders education. Possible ways of limiting the number of names should therefore be explored.

14. If a psychoactive drug has been shown to have a liability for misuse, a proper control decision should be made to restrict its availability to medical and scientific purposes. In such a case, education cannot be regarded as a substitute.

15. During the licensing process a great deal of material which would be valuable in both education and research is collected. Consideration should be given to making this available in an appropriate manner.

16. Ministries of health should be responsible for all issues concerning drug use and the health problems of drug abuse. While several government departments will be concerned in the total problem of abuse, one department should be responsible for overall coordination.

17. The group agreed that statistical data on narcotic and psychotropic drugs under international control constituted very valuable information. It was therefore recommended that efforts should be made by the agencies responsible for their collection to undertake a critical analysis of such data and present them in a form in which they will be easily understood by physicians and other health care professionals. In addition, national drug regulatory authorities should consider ways of obtaining statistical information on the use of psychoactive drugs that are not subject to international control. Such information will assist in the formulation of national drug policies and in professional understanding of the production and availability of psychoactive drugs.

Annex 1

WHO Meeting on Training of Health Care Professionals for Improving Prescription, Delivery and Utilization of Psychoactive Substances

Moscow, 8–13 October 1984

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In prescribing psychoactive drugs to treat insomnia, depression and anxiety, members of the medical profession often find themselves providing a pharmacological response to symptoms that may, in fact, stem from social and personal problems rather than medical ones. It is the deep unease about this situation, coupled with the knowledge that the drugs concerned are liable to misuse and can lead to dependence, that is the cause of the current widespread concern about the large number of prescriptions being issued in many countries. In view of this, physicians have a particular responsibility to ensure that psychoactive drugs are prescribed only for conditions for which they have been shown to be effective, in the correct dose, and for the correct period of time.

This publication discusses in detail the factors that influence prescribing practices, and stresses the need for education—of both members of the public and the health care professions—if rational use of psychoactive drugs is to be ensured.

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